

CONTRACT

1. Parties
2. Purpose
3. Effective Date, Duration and Renewal
4. Non-Exclusive Contract
5. Cooperative Purchasing
6. Term Contract Reporting
7. Services
8. Engineering Access
9. Project Selection
10. Selecting a Contractor
11. Contractor Responsibilities
12. Consideration/Payment
13. Cost/Price Adjustments
14. Access and Retention of Records
15. Assignment, Transfer and Subcontracting
16. Hold Harmless/Indemnification
17. Required Insurance
18. Compliance with Workers' Compensation Act
19. Compliance with Montana Prevailing Wage Requirements
20. Compliance with Laws
21. Intellectual Property
22. Ownership and Publication of Materials
23. Patent and Copyright Protection
24. Contract Termination
25. State Personnel
26. Contractor Personnel
27. Contractor Performance Assessments
28. Transition Assistance
29. Choice of Law and Venue
30. Scope, Amendment and Interpretation
31. Execution

**STREAM RESTORATION SERVICES
SPB07-13780-B**

1. PARTIES

THIS CONTRACT, is entered into by and between the State of Montana, Department of Administration, State Procurement Bureau, (hereinafter referred to as "the State"), whose address and phone number are Room 165 Mitchell Building, 125 North Roberts, PO Box 200135, Helena MT 59620-0135, (406) 444-2575 and OASIS Environmental, Inc., (hereinafter referred to as the "Contractor"), whose address and phone number are PO Box 582, #1 Ninth Street Island Drive, Livingston, MT 59047 and (406) 222-7600.

THE PARTIES AGREE AS FOLLOWS:

2. PURPOSE

The purpose of this term contract is to establish a list of pre-qualified Stream Restoration Services Providers. Work will be assigned through task orders each against this term contract. The State makes no guarantee of use by any agency with authorized access to this term contract. This term contract covers stream restoration services projected to cost up to \$499,999. Proposed projects for stream restoration services for which estimated costs exceed \$500,000 will be advertised for competitive bid.

3. EFFECTIVE DATE, DURATION, AND RENEWAL

3.1 Contract Term. This contract shall take effect upon contract execution and terminate on June 30, 2009, unless terminated earlier in accordance with the terms of this contract. (Mont. Code Ann. § 18-4-313.)

3.2 Contract Renewal. This contract may, upon mutual agreement between the parties and according to the terms of the existing contract, be renewed in two-year intervals, or any interval that is advantageous to the State. This contract, including any renewals, may not exceed a total of seven years. Contractors failing to respond to renewal notices within the time specified by the SPB will have their name placed in an inactive status on the State website, and this shall make that contractor ineligible to receive task orders until such time as renewal information is received and accepted by the Contracts Officer.

4. NON-EXCLUSIVE CONTRACT

The intent of this contract is to provide state agencies with an expedited means of procuring services. This contract is for the convenience of state agencies and is considered by the State Procurement Bureau to be a "Non-exclusive" use contract. Therefore, agencies may obtain this service from sources other than the contract holder(s) as long as they comply with Title 18, MCA, and their delegation agreement. The State Procurement Bureau does not guarantee any usage.

5. COOPERATIVE PURCHASING

Under Montana law, public procurement units, as defined in section 18-4-401, MCA, have the option of cooperatively purchasing with the State of Montana. Public procurement units are local or state public procurement units of this or any other state, including an agency of the United States, or a tribal procurement unit. Unless the bidder/offeror objects, in writing, to the State Procurement Bureau prior to the award of this contract, the prices, terms, and conditions of this contract will be offered to these public procurement units.

6. TERM CONTRACT REPORTING

Term contractors shall furnish annual reports of term contract usage. The annual reports shall be based on information for July 1 through June 30 each year. Minimum information required to be included in usage reports: name of the agency or governmental entity that contacted contractor regarding a potential project; project title; agency contact person; if the project was not successfully negotiated, state the reason; number and title of contracts received; total dollar amounts for contracts received; the names of Contractor's personnel involved in the project; and project status as of usage report date. The first report for this term contract will be due July 30, 2008.

Reported usage and dollar totals may be checked by the State Procurement Bureau against state records for verification. Failure to provide timely or accurate reports is justification for cancellation of the contract and/or justification for removal from consideration for award of contracts by the State.

7. SERVICES AND/OR SUPPLIES

Contractor agrees to provide the State the following: Stream Restoration Designs, Oversight and/or Implementations with a range of complexities for various stream restoration, reclamation and enhancement projects located around the state using techniques that focus on restoring natural processes within the river-riparian ecosystem. Restoration, reclamation and enhancement projects will include stream channel re-naturalization; bank stabilization projects focusing on re-establishing natural structure and function, riparian restoration; spawning rearing and adult fish habitat enhancement; fish passage restoration; and in-stream flow enhancement.

8. ENGINEERING ACCESS

Contractor may need to have access to engineering services depending on the nature of the project. The contractor(s) will be expected to consult with the State and develop a recommendation as to whether engineering services are needed for a given project. However, engineering methodologies are not the emphasis of this RFP. Therefore, **NO** Architectural, Engineering and Land Surveying services are allowed under this term contract as defined under 37-67-101, MCA unless the procurement procedures of 18-8-204, MCA are followed.

8.1 Reuse of Documents. When the projects dictate a design or engineered approach, the State agrees that it will not apply the contractor's designs to any other projects.

9. PROJECT SELECTION

9.1 Project Identification. The State will be responsible for identifying projects, selecting a contractor, assigning a task order, and approving project payments.

9.2 Meetings. For stream restoration services, the contractor may be required to meet with state personnel at the onset of the project and periodically thereafter to resolve technical or contractual problems that may occur during the term of a project. The contractor may be required to attend meetings with other federal and state agencies and public meetings as directed by state personnel.

The contractor may be required to meet with state personnel at the project site to conduct a site evaluation and discuss project issues.

The contractor will be given a minimum of three full working days notice of meeting date, time, and location. While face-to-face meetings are desirable, a conference call meeting may be substituted at the discretion of state personnel. Consistent failure to participate in meetings (two consecutive missed or rescheduled meetings) may result in termination of the task order and contract.

9.3 Approach Expectations. In the case of reclamation activities, the agency will identify the preferred techniques. The selection of particular techniques by the State may define which contractor(s) are contacted for project initiation. The State is always open to new and innovative approaches that accomplish project goals.

10. SELECTING A CONTRACTOR

The State may select a term contract contractor listed in the Stream Restoration Services contract as posted on the Environmental Services Contract-Home page as provided under the State's website address <http://gsd.mt.gov/apps/termcontracts/default.aspx>, taking into consideration such things as the contractor's area of expertise, requirements and location of the project, the Contractor's availability and access to resources necessary to efficiently and effectively complete the project, demonstrated excellent past performance on state and public projects, identified subcontractors, and total project cost.

10.1 General. Ordering agencies shall use the procedures in this section when ordering services priced at hourly rates as established by each Term Contract (TC). The applicable rates and qualifications are identified in the TC along with the each contractor's point of contact.

10.2 Request for Quotation (RFQ) Procedures. The ordering agency must provide an RFQ, which includes the SOW and limited but specific evaluation criteria (e.g., experience and past performance), to TC contractors that offer services that will meet the agency's needs. The RFQ may be posted to the agency's state website to expedite responses.

10.3 Statement of Work (SOW). All SOWs shall include at a minimum a detailed description of the work to be performed, location of work, period of performance, deliverable schedule, applicable performance standards, and any special requirements (e.g., security clearances, travel, special knowledge, budget constraints).

10.3.1 Ordering agency may select a contractor from the pre-qualified list and directly negotiate a mutually acceptable project based on a sudden and unexpected happening or unforeseen occurrence or condition, which requires immediate action (*Exigency*).

10.3.2 Ordering agency may place orders at or below the \$5,000 threshold with any term contract contractor that can meet the agency's needs. The ordering agency should attempt to distribute orders among all contractors.

10.3.3 For orders estimated to exceed \$5,000 but be less than \$25,000:

- The ordering agency shall develop a SOW.
- The ordering agency shall provide the Request for Qualifications (including the SOW and evaluation criteria) to at least three listed TC contractors that will meet the agency's needs.
- The ordering agency shall request that contractors submit firm-fixed prices to perform the services identified in the SOW.

10.3.4 For orders estimated to exceed \$25,000. In addition to meeting the requirements of 10.3.3 above, the ordering agency shall:

- Provide the Request for Qualifications (including the SOW and the evaluation criteria) to all listed term contract contractors.

10.4 Evaluation. The ordering agency shall evaluate all responses received using the evaluation criteria provided to the TC contractors. The ordering agency is responsible for considering the level of effort and the mix of labor proposed to perform a specific task being ordered, and for determining that the total price is reasonable. The agency will place the order with the contractor that represents the best value. After award, ordering agencies will provide timely notification to unsuccessful TC contractors. If an unsuccessful TC

contractor requests information on a task order award that was based on factors other than price alone, a brief explanation of the basis for the award decision shall be provided.

10.5 Minimum Documentation. The ordering agency shall document:

- The TC contractors considered, noting the contractor from which the service was purchased;
- A description of the service purchased;
- The amount paid;
- The evaluation methodology used in selecting the contractor to receive the order;
- The rationale for making the selection;
- Determination of price fair and reasonableness.

The State reserves the right to cease negotiations with the contractor if agreement cannot be reached on project approach and/or costs, and to begin negotiations with another contractor from the list. The State will keep complete written documentation of any negotiation process in the project file.

Agency project task orders will be utilized to finalize the project. Only written addenda will be used for adjustments of the task orders and must be signed by both parties. All task orders must contain signatures from both parties and appropriate agency legal review as directed in their procurement policy.

The State will monitor contractor selection by using the information provided in the annual term contract usage reports.

11. CONTRACTOR RESPONSIBILITIES

11.1 Supervision and Implementation. The contractor for an individual project will be responsible for the supervision and implementation of the approach and will be responsible for oversight of work performed by all subcontractors.

11.2 Applicable Laws. The contractor shall keep informed of, and shall comply with all applicable laws, ordinances, rules, regulations, and orders of the city, county, state, federal or public bodies having jurisdiction affecting any work to be done to provide the services required. The contractor shall provide all necessary safeguards for safety and protection, as set forth by the Department of Labor, Occupational Safety and Health Administration.

11.3 Work Acceptance. The contractor is responsible for project oversight as needed. All work rejected as unsatisfactory shall be corrected prior to final acceptance. The State may also periodically provide personnel for administrative oversight from the initiation of the task order through project completion. All work will be inspected by the State or designated liaison prior to approval of any task order payments. All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. Contractor shall respond within seven calendar days after notice of defects has been given by the State and proceed to immediately remedy all defects.

11.4 Records. The contractor will supply the State with documentation, when requested, of methods used throughout project implementation. Contractor will maintain records, for itself and all subcontractors, of supplies, materials, equipment, and labor hours expended. The contractor will supply the State with photo documentation of methods of habitat restoration progress throughout project implementation. Contractor will maintain records for themselves and all subcontractors of supplies, materials, equipment and labor hours expended.

11.5 Communication. Remoteness of project sites may necessitate that the contractor have some form of field communication, such as a cellular phone. This communication is necessary to enable the State to respond to public questions or concerns related to the project, accidents, inspections, or other project issues that require immediate feedback. In addition, the State or cooperative purchaser may require scheduled communication at agreed upon intervals. The communication schedule will depend upon the project circumstances and requirements of the agency issuing a task order. In the case when a communication

schedule is included in the Scope of Work, the schedule will commence when the Contractor initiates the project.

11.6 Collaboration. The State encourages collaboration between contractors to increase the scope of services offered. If the contractor is not able to provide all services needed for the project, the State will expect the contractor to contact other contractors on the term contract list to negotiate subcontracts for these services before going elsewhere. Exceptions to this strategy will be evaluated on a case-by-case basis.

11.7 Subcontractors, Project Budget and Invoicing. All subcontractors to be used in any project must be approved by the agency initiating the project. Project budgets will be negotiated for each individual project task order. However, all rates, terms, and conditions set forth in this term contract will be applied to individual task orders.

Contractor's billing will include the subcontractors' charges, and payment will be made to the prime contractor.

11.8 On-Site Requirements/Cleanup The contractor should visit all job sites to verify measurements and to become fully aware of the conditions relating to the project and the labor requirements. Failure to do so will not relieve the contractor of their obligation to furnish all materials and labor necessary to carry out the provisions of the contract.

The contractor shall adequately protect the work, adjacent property, and the public in all phases of the work. The contractor shall be responsible for all damages or injury due to their action or neglect.

The contractor shall maintain access to all phases of the project pending inspection by the State or its representative.

All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance.

The contractor shall respond within seven calendar days after notice of observed defects has been given and shall proceed to immediately remedy these defects. Should the contractor fail to respond to the notice or not remedy the defects, the State may have the work corrected at the expense of the contractor.

In terms of cleanup, the contractor shall:

- (a) keep the premises free from debris and accumulation of waste;
- (b) clean up any oil or fuel spills;
- (c) keep machinery clean and free of weeds;
- (d) remove all construction smears and stains from finished surfaces;
- (e) perform finishing site preparation to limit the spread of noxious weeds before final payment by the State; and
- (f) remove all construction equipment, tools and excess materials before final payment by the State.

12. CONSIDERATION/PAYMENT

12.1 Payment Schedule. In consideration for the stream restoration, design and implementation services to be provided, the State shall pay according to the negotiated agreement for each task order. Hourly rates and miscellaneous charges as provided in Appendix C shall be the basis of any negotiations.

12.2 Withholding of Payment. The State may withhold payments to the contractor if the contractor has not performed in accordance with this contract. Such withholding cannot be greater than the additional costs to the State caused by the lack of performance.

13. COST/PRICE ADJUSTMENTS

13.1 Cost Increase by Mutual Agreement. After the initial term of the contract, each renewal term may be subject to a cost increase by mutual agreement. The State retains the unilateral right to reject any cost increase not supported by verifiable evidence.

13.2 Differing Site Conditions. If, during the term of this contract, circumstances or conditions are materially different than set out in the specifications, the contractor may be entitled to an equitable adjustment in the total project price. The contractor shall immediately cease work and notify the State in writing of any such conditions necessitating an adjustment as soon as they are suspected and prior to the changed conditions affecting the performance of this contract. Any adjustment shall be agreed upon in writing by both parties to the contract.

14. ACCESS AND RETENTION OF RECORDS

14.1 Access to Records. The contractor agrees to provide the State, legislative auditor, or their authorized agents' access to any records necessary to determine contract compliance. (18-1-118,MCA)

14.2 Retention Period. The contractor agrees to create and retain records supporting the Environmental Permit Preparation, Analysis and Assistance Services term contract for a period of three years after either the completion date of this contract or the conclusion of any claim, litigation or exception relating to this contract taken by the State of Montana or a third party.

15. ASSIGNMENT, TRANSFER, AND SUBCONTRACTING

The contractor shall not assign, transfer, or subcontract any portion of this contract without the express written consent of the State. (18-4-141, MCA) The contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

16. HOLD HARMLESS/INDEMNIFICATION

The contractor agrees to protect, defend, and save the State, and its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of the Contractor and/or its agents, employees, representatives, assigns, subcontractors, except the sole negligence of the State, under this agreement.

17. REQUIRED INSURANCE

17.1 General Requirements. The contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

17.2 Primary Insurance. The contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees, or volunteers shall be excess of the contractor's insurance and shall not contribute with it.

17.3 Specific Requirements for Commercial General Liability. The contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury, and property

damage of \$1,000,000 per occurrence and \$2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns, or subcontractors.

17.4 Additional Insured Status. The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insured's for liability arising out of activities performed by or on behalf of the contractor, including the insured's general supervision of the contractor; products and completed operations; premises owned, leased, occupied, or used.

17.5 Specific Requirements for Automobile Liability. The contractor shall purchase and maintain coverage with split limits of \$500,000 per person (personal injury), \$1,000,000 per accident occurrence (personal injury), and \$100,000 per accident occurrence (property damage), OR combined single limits of \$1,000,000 per occurrence to cover such claims as may be caused by any act, omission, or negligence of the contractor or its officers, agents, representatives, assigns or subcontractors.

17.6 Additional Insured Status. The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insured's for automobiles leased, hired, or borrowed by the Contractor.

17.7 Deductibles and Self-Insured Retentions. Any deductible or self-insured retention must be declared to and approved by the State agency. At the request of the agency either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the contractor, the contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

17.8 Certificate of Insurance/Endorsements. A certificate of insurance from an insurer with a Best's rating of no less than A- indicating compliance with the required coverage has been received by the State Procurement Bureau, P.O. Box 200135, Helena, MT 59620-0135. The contractor must notify the State immediately, of any material change in insurance coverage, such as changes in limits, coverage, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

18. COMPLIANCE WITH WORKERS' COMPENSATION ACT

Contractors are required to comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with 2005 Montana Laws, chapter 448, section 1, and sections 39-71-401, and 39-71-405, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. Neither the contractor nor its employees are employees of the State. This insurance/exemption must be valid for the entire term of the contract. A renewal document must be sent to the State Procurement Bureau, P.O. Box 200135, Helena, MT 59620-0135, upon expiration.

19. COMPLIANCE WITH MONTANA PREVAILING WAGE REQUIREMENTS

Unless superseded by federal law, Montana law requires that contractors and subcontractors give preference to the employment of Montana residents for any public works contract in excess of \$25,000 for construction or nonconstruction services in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Unless superseded by federal law, each contractor shall ensure that at least 50% of the contractor's workers performing labor on a construction project are bona fide Montana residents. The Commissioner of the Montana Department of Labor and Industry has established the resident requirements in accordance with sections 18-2-403 and 18-2-409, MCA. Any and all questions concerning prevailing wage and Montana resident issues should be directed to the Montana Department of Labor and Industry.

In addition, unless superseded by federal law, all employees working on a public works contract shall be paid prevailing wage rates in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Montana law requires that all public works contracts, as defined in section 18-2-401, MCA, in which the total cost of the contract is in excess of \$25,000, contain a provision stating for each

job classification the standard prevailing wage rate, including fringe benefits, travel, per diem, and zone pay that the contractors, subcontractors, and employers shall pay during the public works contract.

Furthermore, section 18-2-406, MCA, requires that all contractors, subcontractors, and employers who are performing work or providing services under a public works contract post in a prominent and accessible site on the project staging area or work area, no later than the first day of work and continuing for the entire duration of the contract, a legible statement of all wages and fringe benefits to be paid to the employees in compliance with section 18-2-423, MCA. Section 18-2-423, MCA, requires that employees receiving an hourly wage must be paid on a weekly basis.

Each contractor, subcontractor, and employer must maintain payroll records in a manner readily capable of being certified for submission under section 18-2-423, MCA, for not less than three years after the contractor's, subcontractor's, or employer's completion of work on the public works contract.

For current prevailing wage information visit the state website at:
<http://erd.dli.mt.gov/laborstandard/wagehrprevail.asp>

20. COMPLIANCE WITH LAWS

The Contractor must, in performance of work under this contract, fully comply with all applicable federal, state, or local laws, rules, and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the contract will be made on the basis of merit and qualifications, and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the contract.

21. INTELLECTUAL PROPERTY

All patent and other legal rights in or to inventions created in whole or in part under this contract must be available to the State for royalty-free and nonexclusive licensing. Both parties shall have a royalty-free, nonexclusive, and irrevocable right to reproduce, publish or otherwise use and authorize others to use, copyrightable property created under this contract.

22. OWNERSHIP AND PUBLICATION OF MATERIALS

The State (and the ordering agency) shall own working papers and end products, but the contractor may keep a copy. The State and the contractor agree that any interpretation of data or conclusions pertaining to this contract and task orders will be submitted for review to the State prior to release. It is further agreed that all public releases pertaining to this contract will be at the discretion of the State. The State must authorize the contractor in writing to release any information. Unless stated otherwise in this contract, upon termination of this contract, all information and data will become the property of the State. A copy may be kept by the contractor.

23. PATENT AND COPYRIGHT PROTECTION

23.1 Third Party Claim. In the event of any claim by any third party against the State that the products furnished under this contract infringe upon or violate any patent or copyright, the State shall promptly notify contractor. Contractor shall defend such claim, in the State's name or its own name, as appropriate, but at contractor's expense. Contractor will indemnify the State against all costs, damages, and attorney's fees that accrue as a result of such claim. If the State reasonably concludes that its interests are not being properly protected, or if principles of governmental or public law are involved, it may enter any action.

23.2 Product Subject of Claim. If any product furnished is likely to or does become the subject of a claim of infringement of a patent or copyright, then contractor may, at its option, procure for the State the right

to continue using the alleged infringing product, or modify the product so that it becomes non-infringing. If none of the above options can be accomplished, or if the use of such product by the State shall be prevented by injunction, the State will determine if the Contract has been breached.

24. CONTRACT TERMINATION

24.1 Termination for Cause. The State may, by written notice to the contractor, terminate this contract in whole or in part at any time the Contractor fails to perform this contract.

24.2 Reduction of Funding. The State, at its sole discretion, may terminate or reduce the scope of this contract, if available funding is reduced for any reason. (18-4-313(3), MCA)

25. STATE PERSONNEL

25.1 State Contract Manager. The State Contract Manager identified below is the State's single point of contact and will perform all contract management pursuant to section 2-17-512, MCA, on behalf of the state. Written notices, requests, complaints or any other issues regarding the contract should be directed to the State Contract Manager.

The State Contract Manager for this contract is:

Robert Oliver, Contracts Officer
Room 165 Mitchell Building
125 North Roberts
PO Box 200135
Helena MT 59620-0135
Telephone #: (406) 444-0110
Fax #: (406) 444-2529
E-mail: roliver@mt.gov

25.2 State Project Manager. Each using state agency or cooperative purchaser will identify a Project Manager in the project task order. The Project Manager will manage the day-to-day project activities on behalf of the State/Cooperative Purchaser.

26. CONTRACTOR PERSONNEL

26.1 Change of Staffing. Since qualifications of personnel were key in determining which offeror's were selected to be on this term contract, a written notification to the State Agency requesting services of any contractor changes of key personnel must be made prior to entering into negotiations to perform any specific work scope. Contractor shall replace such employee(s) at its own expense with an employee of substantially equal abilities and qualifications without additional cost to the Agency. If these staffing changes cause the contractor to no longer meet the qualifications stated herein, that firm will be removed from the service area of this term contract. Failure to notify the State Agency of staffing changes could result in the contractor being removed from the term contract listing and possible suspension from bidding on other State projects.

26.2 Contractor Contract Manager. The Contractor Contract Manager identified below will be the single point of contact to the State Contract Manager and will assume responsibility for the coordination of all contract issues under this contract. The Contractor Contract Manager will meet with the State Contract Manager and/or others necessary to resolve any conflicts, disagreements, or other contract issues.

The Contractor Contract Manager for this contract is:

Tom Coleman
PO Box 582
Livingston, MT 59047
Telephone #: (406) 222-7600

26.3 Contractor Project Manager. The Contractor Project Manager identified below will manage the day-to-day project activities on behalf of the Contractor:

The Contractor Project Manager for this contract is:

Tom Coleman
PO Box 582
Livingston, MT 59047
Telephone #: (406) 222-7600
Fax #: (406) 222-7677
E-mail: T.Coleman@oasisenviro.com

27. CONTRACTOR PERFORMANCE ASSESSMENTS

The State may do assessments of the Contractor's performance. This contract may be terminated for one or more poor performance assessments. Contractor will have the opportunity to respond to poor performance assessments. The State will make any final decision to terminate this contract based on the assessment and any related information, the Contractor's response, and the severity of any negative performance assessment. The Contractor will be notified with a justification of contract termination. Performance assessments may be considered in future solicitations.

28. TRANSITION ASSISTANCE

If this contract is not renewed at the end of this term, or is terminated prior to the completion of a project, or if the work on a project is terminated, for any reason, the Contractor must provide for a reasonable period of time after the expiration or termination of this project or contract, all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such services to the State or its designees. Such transition assistance will be deemed by the parties to be governed by the terms and conditions of this contract, except for those terms or conditions that do not reasonably apply to such transition assistance. The State shall pay the Contractor for any resources utilized in performing such transition assistance at the most current rates provided by the contract. If there are no established contract rates, then the rate shall be mutually agreed upon. If the State terminates a project or this contract for cause, then the State will be entitled to offset the cost of paying the Contractor for the additional resources the Contractor utilized in providing transition assistance with any damages the State may have otherwise accrued as a result of said termination.

29. CHOICE OF LAW AND VENUE

This contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal, or subsequent task order must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana, and each party shall pay its own costs and attorney fees. (18-1-401, MCA)

30. SCOPE, AMENDMENT AND INTERPRETATION

30.1 Contract. This contract consists of 12 numbered pages, any Attachments as required, RFP # SPB07-1378O, as amended, and the Contractor's RFP response, as amended. In the case of dispute or ambiguity about the minimum levels of performance by the Contractor, the order of precedence of document interpretation is in the same order.

30.2 Entire Agreement. These documents contain the entire agreement of the parties. Any enlargement, alteration, or modification requires a written amendment signed by both parties.

31. EXECUTION

The parties through their authorized agents have executed this contract on the dates set out below.

**DEPARTMENT OF ADMINISTRATION
STATE PROCUREMENT BUREAU
PO BOX 200135
HELENA, MT 59620-0135**

**OASIS ENVIRONMENTAL, INC
#1 NINTH STREET ISLAND DRIVE
PO BOX 582
LIVINGSTON, MT 59047**

BY: _____
(Name/Title)

BY: _____
(Name/Title)

BY: _____
(Signature)

BY: _____
(Signature)

DATE: _____

DATE: _____

Approved as to Legal Content:

Legal Counsel (Date)
Agency: _____

Approved as to Form:

Procurement Officer (Date)
State Procurement Bureau

STREAM RESTORATION SERVICES PROPOSAL

STATE OF MONTANA

RE: RFP# SPB07-13780

Issuing Agency:
State Procurement Bureau
General Services Division
Room 165, Mitchell Building
125 North Roberts Street
PO Box 200135
Helena, MT 59620-0135

Submitted by:



OASIS Environmental, Inc.
P.O. Box 582
#1 Ninth St. Island Drive
Livingston, MT 59047
Tel: (406) 222-7600

OASIS Environmental, Inc.
P.O. Box 1384
480 Electric Avenue, Ste 5
Bigfork, MT 59911
Tel: (406) 837-0804

The single point-of-contact for this proposal is Tom Coleman (406.222.7600).

June 15, 2007

(intentionally blank)

TABLE OF CONTENTS

SECTION 1: PROJECT OVERVIEW AND INSTRUCTIONS	1-1
1.0 PROJECT OVERVIEW	1-1
1.1 CONTRACT TERM	1-1
1.2 TERM CONTRACT REPORTING	1-1
1.3 SINGLE POINT OF CONTACT	1-1
1.4 REQUIRED REVIEW	1-1
1.5 GENERAL REQUIREMENTS.....	1-1
1.6 SUBMITTING A PROPOSAL	1-2
1.7 COST OF PREPARING A PROPOSAL	1-2
SECTION 2: RFP STANDARD INFORMATION	2-1
2.0 AUTHORITY	2-1
2.1 OFFEROR COMPETITION	2-1
2.2 RECEIPT OF PROPOSALS AND PUBLIC INSPECTION	2-1
2.3 CLASSIFICATION AND EVALUATION OF PROPOSALS.....	2-1
2.4 COOPERATIVE PURCHASING.....	2-2
2.5 STATE'S RIGHTS RESERVED.....	2-2
SECTION 3: SCOPE OF PROJECT	3-1
3.0 BACKGROUND	3-1
3.1 ENGINEERING ACCESS.....	3-1
3.2 GENERAL SELECTION PROCESS.....	3-1
3.3 CONTRACTOR SELECTION PROCESS	3-1
3.4 CONTRACTOR RESPONSIBILITIES	3-2
3.5 SUBCONTRACTORS.....	3-3
3.6 SCOPE OF WORK.....	3-3
SECTION 4: OFFEROR QUALIFICATIONS/INFORMATIONAL REQUIREMENTS	4-1
4.0 STATE'S RIGHT TO INVESTIGATE AND REJECT	4-1
4.1 OFFEROR INFORMATIONAL REQUIREMENTS.....	4-1
SECTION 5: COST PROPOSAL	5-1
5.0 COST PROPOSAL	5-1
SECTION 6: EVALUATION PROCESS	6-1
6.0 BASIS OF EVALUATION	6-1
6.1 EVALUATION CRITERIA	6-1

TABLES

Table 1: OASIS stream restoration projects and associated services in Montana.	4-19
Table 2: OASIS stream restoration staff education, experience, and specialized training.....	4-20
Table 3: List of Subcontractors, experience and equipment.....	4-25
Table 4: OASIS Rate Sheet (for planning purposes only)	5-1

APPENDICES

APPENDIX A: STANDARD TERMS AND CONDITIONS

APPENDIX B: CONTRACT

APPENDIX C: OASIS STAFF RESUMES

SECTION 1: PROJECT OVERVIEW AND INSTRUCTIONS

1.0 PROJECT OVERVIEW

OASIS Environmental understands and will comply.

1.1 CONTRACT TERM

OASIS Environmental understands and will comply.

1.2 TERM CONTRACT REPORTING

OASIS Environmental understands and will comply.

1.3 SINGLE POINT OF CONTACT

OASIS Environmental understands and will comply.

1.4 REQUIRED REVIEW

1.4.1 Review RFP.

OASIS Environmental understands and will comply.

1.4.2 Form of Questions.

OASIS Environmental understands and will comply.

1.4.3 State's Responses.

OASIS Environmental understands and will comply.

1.5 GENERAL REQUIREMENTS

1.5.1 Acceptance of Standard Terms and Conditions/Contract.

OASIS Environmental understands and will comply.

1.5.2 Resulting Contract.

OASIS Environmental understands and will comply.

1.5.3 Mandatory Requirements.

OASIS Environmental understands and will comply.

1.5.4 Understanding of Specifications and Requirements.

OASIS Environmental understands and will comply.

1.5.5 Prime Contractor/Subcontractors.

OASIS Environmental understands and will comply.

1.5.6 Offeror's Signature.

OASIS Environmental understands and will comply.

1.5.7 Offer in Effect for 120 Days.

OASIS Environmental understands and will comply.

1.6 SUBMITTING A PROPOSAL

1.6.1 Organization of Proposal.

OASIS Environmental understands and will comply.

1.6.2 Failure to Comply with Instructions.

OASIS Environmental understands and will comply.

1.6.3 Multiple Proposals.

OASIS Environmental understands and will comply.

1.6.4 Price Sheets.

OASIS Environmental understands and will comply.

1.6.5 Copies Required and Deadline for Receipt of Proposals.

OASIS Environmental understands and will comply.

1.6.6 Late Proposals.

OASIS Environmental understands and will comply.

1.7 COST OF PREPARING A PROPOSAL

1.7.1 State Not Responsible for Preparation Costs.

OASIS Environmental understands and will comply.

1.7.2 All Timely Submitted Materials Become State Property.

OASIS Environmental understands and will comply.

(intentionally blank)

SECTION 2: RFP STANDARD INFORMATION

2.0 AUTHORITY

OASIS Environmental understands and will comply.

2.1 OFFEROR COMPETITION

OASIS Environmental understands and will comply.

2.2 RECEIPT OF PROPOSALS AND PUBLIC INSPECTION

2.2.1 Public Information.

OASIS Environmental understands and will comply.

2.2.2 Procurement Officer Review of Proposals.

OASIS Environmental understands and will comply.

2.3 CLASSIFICATION AND EVALUATION OF PROPOSALS

2.3.1 Initial Classification of Proposals as Responsive or Non-responsive.

OASIS Environmental understands and will comply.

2.3.2 Determination of Responsibility.

OASIS Environmental understands and will comply.

2.3.3 Evaluation of Proposals.

OASIS Environmental understands and will comply.

2.3.4 Completeness of Proposals.

OASIS Environmental understands and will comply.

2.3.5 Opportunity for Discussion/Negotiation and/or Oral Presentation.

OASIS Environmental understands and will comply.

2.3.6 Best and Final Offer.

OASIS Environmental understands and will comply.

2.3.7 Evaluator/Evaluation Committee Recommendation for Contract Award.

OASIS Environmental understands and will comply.

2.3.8 Request for Documents Notice.

OASIS Environmental understands and will comply.

2.3.9 Contract Negotiation.

OASIS Environmental understands and will comply.

2.3.10 Contract Award.

OASIS Environmental understands and will comply.

2.4 COOPERATIVE PURCHASING

OASIS Environmental understands and will comply.

2.5 STATE'S RIGHTS RESERVED

OASIS Environmental understands and will comply.

SECTION 3: SCOPE OF PROJECT

3.0 BACKGROUND

OASIS Environmental understands and will comply.

3.1 ENGINEERING ACCESS

OASIS Environmental understands and will comply.

3.2 GENERAL SELECTION PROCESS

3.2.1 Project Identification.

OASIS Environmental understands and will comply.

3.2.2 Tier Two Exceptions.

OASIS Environmental understands and will comply.

3.3 CONTRACTOR SELECTION PROCESS

OASIS Environmental understands and will comply.

3.3.1 General.

OASIS Environmental understands and will comply.

3.3.2 Request for Quotation (RFQ) Procedures.

OASIS Environmental understands and will comply.

3.3.3 Statement of Work (SOWs).

OASIS Environmental understands and will comply.

3.3.4 Cost Estimate Procedures.

OASIS Environmental understands and will comply.

3.3.4.1 OASIS Environmental understands and will comply.

3.3.4.2 OASIS Environmental understands and will comply.

3.3.4.3 OASIS Environmental understands and will comply.

3.3.5 For Orders Estimated to Exceed \$25,000.

OASIS Environmental understands and will comply.

3.3.6 Evaluation.

OASIS Environmental understands and will comply.

3.3.7 Minimum Documentation.

OASIS Environmental understands and will comply.

3.4 CONTRACTOR RESPONSIBILITIES

3.4.1 Supervision and Implementation.

OASIS Environmental understands and will comply.

3.4.2 Applicable Laws.

OASIS Environmental understands and will comply.

3.4.3 Work Acceptance.

OASIS Environmental understands and will comply.

3.4.4 Records.

OASIS Environmental understands and will comply.

3.4.5 Communication.

OASIS Environmental understands and will comply.

3.4.6 Change of Staffing.

OASIS Environmental understands and will comply.

3.4.7 Collaboration.

OASIS Environmental understands and will comply.

3.4.8 Subcontractors, Project Budget and Invoicing.

OASIS Environmental understands and will comply.

3.4.9 On-Site Requirements/Cleanup.

OASIS Environmental understands and will comply.

3.4.10 Meetings.

OASIS Environmental understands and will comply.

3.5 SUBCONTRACTORS

3.5.1 Equipment Operators.

OASIS Environmental understands and will comply.

3.5.2 Revegetation Specialists.

OASIS Environmental understands and will comply.

3.5.3 Subcontractor Qualifications and Experience.

OASIS Environmental understands and will comply.

3.6 SCOPE OF WORK

3.6.1 General Overview.

OASIS Environmental understands and will comply.

3.6.2 Design Expectations.

OASIS Environmental understands and will comply.

3.6.3 Experience with Relevant Public Contract Work.

OASIS Environmental understands and will comply.

3.6.4 Experience with Recent Landowner Projects.

OASIS Environmental understands and will comply.

3.6.5 Diverse Experience with Stream Restoration and Fish Habitat Improvement Projects.

OASIS Environmental understands and will comply.

3.6.6 Staff Qualifications and Office Location(s).

OASIS Environmental understands and will comply.

3.6.7 Working Knowledge of Modern Stream and Fish Habitat Restoration Practices.

OASIS Environmental understands and will comply.

SECTION 4: OFFEROR QUALIFICATIONS/INFORMATIONAL REQUIREMENTS

OASIS Environmental understands and will comply.

4.0 STATE'S RIGHT TO INVESTIGATE AND REJECT

OASIS Environmental understands and will comply.

4.1 OFFEROR INFORMATIONAL REQUIREMENTS

OASIS Environmental understands and will comply.

4.1.1 References.

OASIS has completed stream restoration projects for local, state and federal government entities as well as private clients. Government projects include work with local municipalities, Montana Fish, Wildlife and Parks, Montana Department of Transportation, the Natural Resources Conservation Service and the National Park Service Rivers, Trails and Conservation Assistance Program. Projects range from full-scale relocation and restoration of stream channels ranging from spring creeks to third order streams as well as bank stabilization and restoration along the Yellowstone River. OASIS incorporates a holistic approach, restoring channel and floodplain habitats congruent with the stream's fluvial geomorphic processes, which helps promote the creation and self-maintenance of aquatic habitat and geomorphic features over time. In many instances, these projects have restored or created habitat for several of Montana's fish species of special concern, including the re-introduction of Yellowstone cutthroat trout into a headwater stream after catastrophic flood and wildfire; and the creation of more favorable habitat conditions for the long-term survival of an isolated, genetically pure westslope cutthroat trout population. Stream restoration project descriptions are listed below for both government and private clients.

Government Project References

Woodson Creek Wetland & Stream Restoration - Compensatory Mitigation for Montana Department of Transportation - Ringling, Montana

OASIS led design and construction efforts on a sixty acre riparian and emergent wetland restoration and reconstruction of a 7,680-foot channelized reach of Woodson Creek. This site was converted to farmable land in the late 1960's by channelizing a high sinuosity reach of Woodson Creek and filling old channel meanders. The associated riparian area was cultivated and seeded to non-native cultivars.

Restoration designs included developing appropriate planform, profile and cross-section for the creek and development of a floodplain grading and revegetation plan. Work tasks included geomorphic assessments and channel classification (Rosgen), reference reach characterization, flood frequency analysis, bedload characterization and hydraulic modeling. All applicable federal, state and local permits were obtained by the design team.

Drake Burford provided project management and oversight; Tom Coleman led the design and construction efforts; DeWitt Dominick directed the stream design phase of the project; Meghan Fenoglio performed the delineation and assessment of conditions and was responsible for all revegetation aspects of the project; Max Hjortsberg provided construction oversight; Allison Levy and Kristen Wester assisted with mapping and revegetation of native wetland plants and willows; and Jeannette Romig provided a complete environmental wetland evaluation.

Reference Information

Company Name: Ringling Land & Cattle Co. LLC;
Montana Department of
Transportation (MDT)
Location of Services: Ringling, MT
Contact Person: Steve Claiborn; Larry Urban
Telephone Number: 713-825-8902; 406-444-6224
E-mail Address: lurban@mt.gov
Date(s) of Services: 2004 - 2006
Key Personnel: Drake Burford
Tom Coleman
DeWitt Dominick
Meghan Fenoglio
Max Hjortsberg
Allison Levy
Jeannette Romig
Kristen Wester



Pre-construction



Construction



Post-construction

Alderman River Ranch West Spring Creek Restoration - Belgrade, Montana

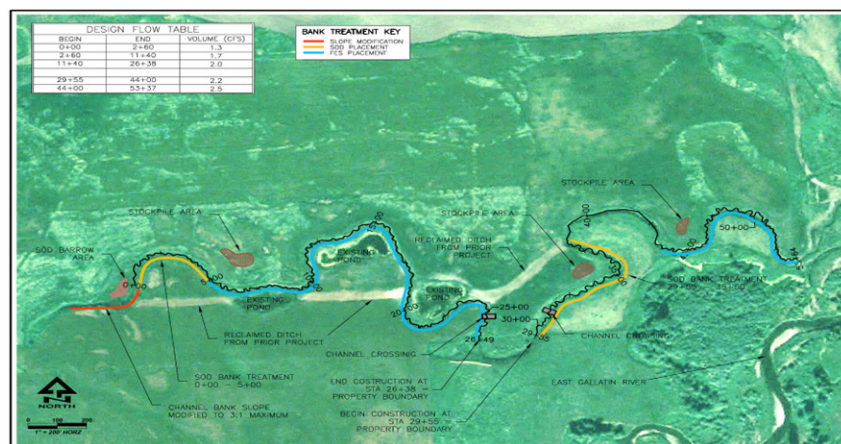
The intent of this NRCS funded restoration project is to reclaim an unnamed spring creek (referred to as "West" Spring Creek for this project) located on the Alderman River Ranch near Belgrade, Montana. For a variety of reasons, a prior project failed to achieve restoration of the stream. The prior project involved excavating a new stream and floodplain along a historic channel course. The design channel bed elevation was set approximately 1.5 to 3.5 feet below the existing ground surface and was widened on the horizontal dimension at the channel bends to create a floodplain surface. Along the straight reaches, a floodplain channel was not created and consequently an entrenched trapezoidal channel section developed. The channel water surface in many areas is more than one foot below the groundwater emergence elevation on the channel bank and terrace slopes. This groundwater seep in many areas is actively transporting soil particles out of the banks and into the creek. Further, in the most entrenched reaches, stream flows are in contact with 2:1 or steeper partially vegetated slopes. The result is bank erosion and introduction of significant quantities of silt and further widening of the channel. In channel bend areas where a floodplain surface was excavated, bank revegetation / stabilization was largely unsuccessful which further contributed to overwidening of the active channel, sediment deposition and overall reduction in sediment transport function.

This proposed project aims to restore West Spring Creek to a naturally functioning system by re-establishing a hydraulically efficient channel and an active floodplain surface. A water body with natural function includes water conveyance, sediment transport efficiency and maintenance of suitable aquatic habitat. The proposed project intends to minimize the amount of sediment input by establishing a floodplain between the active channel and terraced slopes thus eliminating flow velocities adjacent to terrace slopes (existing sediment source) and the direct pathway for fluvial entrainment of terrace soil through groundwater seep.

Tom Coleman provided design restoration alternatives, flood frequency and channel hydraulic analysis, geomorphic designs, and grading plans and will act as project manager. Mike Cox assisted with all design restoration alternatives, flood frequency and channel hydraulic analysis and geomorphic designs and provided engineering review. Meghan Fenoglio will coordinate all revegetation growth and provide revegetation site supervision and Max Hjortsberg will provide project and revegetation oversight.

Reference Information

Company Name: Alderman River Ranch, LLC
Location of Services: Belgrade, MT
Contact Person: Dan Alderman; Tim Griffiths
Telephone Number: 406-388-9080; 406-587-6811
E-mail Address(es): dan@aldermanriverranch.com
 Tim.Griffiths@mt.usda.gov
Date(s) of Services: 2007 - Present
Key Personnel: Tom Coleman
 Mike Cox
 Meghan Fenoglio
 Max Hjortsberg



Wetland, Stream and Riparian Restoration - Compensatory Mitigation for Montana Department of Transportation - Big Timber, Montana

This project involved the design and construction of a five acre riparian wetland and restoration and reconstruction on a 2,500-foot channelized reach of Big Timber Creek. The creek had been channelized by a previous landowner as a flood control measure and the floodplain was isolated through construction of dikes along the channel.

Restoration designs included developing appropriate planform, profile and cross-section for the creek, restoration and development of floodplain grading and a revegetation plan. Work tasks included geomorphic assessments and channel classification (Rosgen), reference reach characterization, flood frequency analysis, bedload characterization and hydraulic modeling of the design channel. All applicable federal, state and local permits were obtained by the design team.

Tom Coleman served as project manager and provided all survey, design and mitigation coordination; Max Hjortsberg provided revegetation oversight; Jeannette Romig prepared soils and hydrologic mapping; and Russell Smith coordinated revegetation efforts and agency / landowner communications.

Reference Information

Company Name: Cloud Ranch, LLC;
Montana Department of
Transportation (MDT)
Location of Services: Big Timber, MT
Contact Person: John Heminway; Larry Urban
Telephone Number: 406-932-6015; 406-444-6224
E-mail Address(es): bar20@aol.com;
lurban@mt.gov
Date(s) of Services: 2002 - 2003
Key Personnel: Tom Coleman
Max Hjortsberg
Jeannette Romig
Russell Smith



Representative channel sections
before construction



Post-construction

Fleshman Creek Restoration - Livingston, Montana

The City of Livingston retained OASIS (formerly Aquatic Design and Construction) to design and implement a riparian revegetation plan and provide channel design support for the Fleshman Creek Restoration project. Fleshman Creek is a small tributary of the Yellowstone River. The creek flows through an abandoned Yellowstone River channel and the flows have always been insufficient for the relatively large channel size. This factor, compounded by several large beaver ponds, resulted in a very wide and shallow channel.

Reference Information

Company Name: City of Livingston
Location of Services: Livingston, MT
Contact Person: Steve Golnar
Telephone Number: 406-222-2005
E-mail Address: citymanager@ci.livingston.mt.us
Date(s) of Services: 2004
Key Personnel: Tom Coleman
Meghan Fenoglio
Max Hjortsberg
Jeannette Romig
Russell Smith

Through a cooperative effort of the Joe Brooks Chapter of Trout Unlimited, the National Park Service and the City of Livingston, a new narrowed channel was designed and constructed over a 2,200-foot reach. Revegetation necessary to restore the plant community for 2,200 feet of streambank and 1.2 acres of adjacent floodway included approximately 1,000 willow cuttings and 3,000 wetland plugs and 180 riparian shrubs that were grown, delivered and installed by the OASIS revegetation team with the help of over 300 Livingston middle school student volunteers. In addition, a riparian seed mix was broadcast and a 1/3-acre area of disturbed uplands was covered with topsoil and seeded with a native upland seed mix.

Tom Coleman provided survey, design and mitigation coordination; Meghan Fenoglio collected, organized and supervised the field collection and greenhouse production of revegetation requirements; Max Hjortsberg served as project manager and provided oversight; Jeannette Romig provided soils and hydrologic mapping; and Russell Smith designed the revegetation plan and coordinated agency meetings.



Revegetation with
middle school students



Post-Construction

Wetland & Stream Restoration - Compensatory Mitigation for Montana Department of Transportation - Jeffers, Montana

Design and construction of an 80+ acre emergent wetland and 9,300 feet of spring creek channel restoration on the Jack Creek Ranch near Ennis, Montana. The site had been progressively drained over the course of forty years through the development of an extensive ditch system. The land was regularly cultivated and farmed throughout the years of the drainage project.

Reference Information

Company Name:	Jack Creek Ranch, LLC MT Dept. of Transportation (MDT)
Location of Services:	Jeffers, Montana
Contact Person(s):	Rick Webel; Larry Urban
Telephone Number(s):	(516) 674-4200; (406) 444-6224
E-Mail Address(es):	rcwebel@yahoo.com; lurban@mt.gov
Date(s) of Services:	2001 - 2004
Key Personnel & Roles:	Tom Coleman Meghan Fenoglio Jeannette Romig Russell Smith

An associated spring creek on the southern boundary of the drained wetland was overwidened from years of agricultural use and fifteen on-channel ponds were excavated over a 3000+ foot reach of the creek. Project activities included developing grading plans, water budgets, performance standards and revegetation strategies for the wetland and riparian components of the project. Stream restoration tasks included geomorphic assessments and channel classification (Rosgen), reference reach characterization, design and construction specifications to create a new channel within an overwidened reach of the creek with silt accumulations up to two feet and relocation plans to route a reach of the channel around the series of excavated on-channel ponds.

The revegetation plan was based on historical aerial photographic evidence, testimony from past ranch operators, field verification of soil conditions and analagous site investigation. A pre-construction wetland delineation and functional assessment was verified by MDT and Army Corps of Engineers personnel. Much of the wetland areas were designed to naturally revegetate following restoration of the sites hydrology, through recruitment of the historic wetland seed bank. This natural recovery was based on the documented presence of remnant wetland vegetation and hydric soils within an actively drained field. In areas of high disturbance a combination of wetland seed and containerized wetland plugs were implemented.

A performance standards and crediting ratio proposal was developed and is currently used as a supporting document for the site's 5-year monitoring program. All applicable federal, state and local permits were obtained by the design team.

Tom Coleman led the design and construction phases of the project; Jeannette Romig was responsible for on-site management and revegetation design; Russell Smith designed both the stream corridor and wetland revegetation plan; and Meghan Fenoglio coordinated, organized and supervised the field collection and greenhouse production of approximately 50,000 native wetland plants for the revegetation efforts.



Pre-construction



Construction



Post-construction -
one year later

Private Landowner Project References

Catron Creek Channel Realignment - Bozeman, Montana

The Gallatin Center retained OASIS (formerly Aquatic Design and Construction) to relocate and enhance a straightened and channelized reach of East Catron Creek in Bozeman, MT. OASIS worked closely with MT Fish Wildlife & Parks and the developer to create a working configuration for creek relocation, which fit within a meander corridor constrained by the development infrastructure while improving stream

functionality, maintaining channel stability and assuring flood conveyance as required by the City of Bozeman. The restoration design included planform and profile design as well as hydraulic analysis and HEC-RAS model development. Design criteria included floodplain capacity to convey a 100-year flood without impacting surrounding infrastructure.

OASIS provided oversight on the project from initial planning through construction and revegetation. The revegetation plan included seed collection, propagation, transplanting, maintenance, delivery and the planting of obligate wetland plants throughout the transitional zone. These plantings included native rushes and sedges (over 2,700 plugs), willow, dogwood, cottonwood, aspen and upland forbs and wildflowers. In order to out-compete invasive species such as Reed Canary Grass, the streambanks were planted at 1-½ foot and smaller intervals for quicker vegetative establishment.

Drake Burford assisted in channel design and coordinated and supervised construction and revegetation efforts. Tom Coleman developed planform, profile design plans and a HEC-RAS model and performed a hydraulic analysis. Meghan Fenoglio was responsible for the production of the wetland and upland plants and shrubs and Russell Smith provided wetland, stream and infrastructure technical support and assisted the client with proper permitting procedures and agency communications.

Reference Information

Company Name: Gallatin Center
Location of Services: Bozeman, MT
Contact Person: Gene Graff
Telephone Number: 406-587-7950
E-mail Address: graf3@gallatincenter.com
Date(s) of Services: 2003 - 2005
Key Personnel: Drake Burford
Tom Coleman
Meghan Fenoglio
Russell Smith



Pre-Construction



Construction



Post-Construction

Cayuse Creek Stream Restoration - Melville, Montana

A stream restoration project on Cayuse Creek in south-central Montana that will restore approximately 11,600-feet of degraded stream channel. The ranch property has historically been heavily grazed by cattle which has led to significant degradation of the streambanks and riparian vegetation. Restoration efforts will include restoring appropriate channel cross-section, stabilizing banks, establishing riparian vegetation and fencing-off riparian areas and are scheduled for the fall of 2007.

Reference Information

Company Name:	Private Client
Location of Services:	Livingston, MT
Contact Person:	Jim Revoir
Telephone Number:	415-328-2201
E-mail Address:	jim@grillys.com
Date(s) of Services:	2007 - Present
Key Personnel:	Drake Burford Tom Coleman DeWitt Dominick Kristen Wester

Drake Burford is responsible for site survey and assessment, substrate and streamflow analysis, assisting in channel design, acquiring necessary permits and supervising construction activities and revegetation efforts. Tom Coleman is providing engineering and hydraulic design. DeWitt Dominick developed geomorphic design plans and will assist in construction oversight efforts. Kristen Wester assisted in site survey, data collection and plant, bird and wildlife identification and will also assist with revegetation efforts.



Photos showing Cayuse Creek streambank degradation – pre-construction.

Lone Willow Fisheries Enhancement - White Sulphur Springs, Montana

The purpose of the project is to create more favorable conditions for the long term survival of an isolated Westslope cutthroat trout population. An on-stream irrigation reservoir exists at the lower end of the project reach and functions as a barrier to upstream fish migration. As a consequence, the reservoir has protected and isolated a population of genetically pure Westslope cutthroat trout.

Reference Information

Company Name: Stone Temple Ranch
Location of Services: White Sulphur Springs, MT
Contact Person: Ken Wilson
Telephone Number: 212-902-8655
E-mail Address: ken.wilson@gs.com
Date(s) of Services: 2007 - Present
Key Personnel: Drake Burford
Tom Coleman

Historic operation of the reservoir involved drawing water from the pond to supply a flood irrigated hay field. As a result, during the summer irrigation season, the pond water level was significantly reduced. This large seasonal drawdown increased water temperature, increased turbidity and decreased the amount of emergent wetland edge. Cattle also congregated around the pond and riparian area of Lone Willow Creek and accordingly, water quality was generally impaired in the stream and reservoir. In addition, two culvert crossings exist on the upper reaches of Lone Willow Creek and function as partial fish migration barriers, thus reducing the availability of important upstream habitat.

To create more favorable conditions for long term survival of the cutthroat trout population, irrigation operations will be altered, over-wintering habitat will be enhanced, the reservoir and Lone Willow Creek riparian corridor will be fenced off and the existing culverts will be replaced. The pond depth will be increased and seepage from the pond will be reduced. By reducing seepage, irrigation water can be drawn off the surface of the pond and the normal drawdown will not be necessary. Elimination of the normal irrigation drawdown and deepening of the pond will provide over-wintering habitat for the trout population and will maintain a permanent emergent wetland fringe as fry rearing habitat. The existing undersized culverts lack stream substrate and thus have very high water velocities that prevent upstream fish migration. They will be replaced with oversized culverts that simulate the natural stream channel and accordingly will provide unimpeded upstream fish passage for all species and life stages at all stream flows.

Drake Burford performed the initial fish inventory, identifying the isolated Westslope cutthroat population. He also serves as project manager, assisted in the stream simulation culvert design and is in charge of construction oversight. Tom Coleman developed a hydraulic design of a natural streambed fish passage culvert and is assisting with construction oversight.



Upstream of reservoir - ideal
Westslope cutthroat trout
habitat in Lone Willow Creek



Westslope cutthroat trout in
upper Lone Willow Creek



Drawn down reservoir
during irrigation season

Mission Creek Channel Relocation - Private Ranch - Livingston, Montana

This project includes relocation of a 2,500-foot reach of Mission Creek. The project will rectify agricultural related channelization activities that have significantly altered the channel function and aquatic habitat.

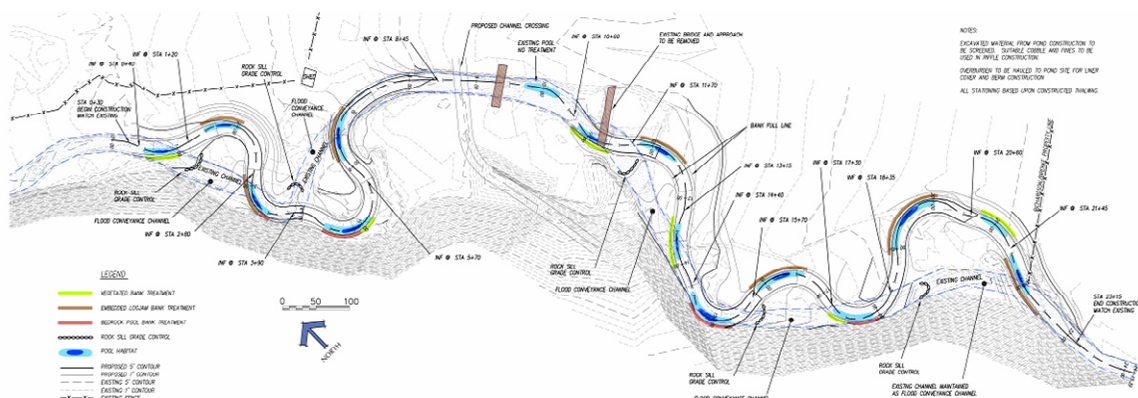
Design activities included identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor, floodplain grading, wildlife species inventory and habitat assessment.

Channel construction activities are scheduled for the summer of 2007 and will involve a technique to consolidate streambed and bank toe materials, which will improve post construction shear strength and allow for the use of appropriately sized native alluvium.

Tom Coleman and Mike Cox were responsible for all design activities listed above. DeWitt Dominick provided additional assistance in hydrology, geomorphic design and project oversight and Drake Burford assisted in channel survey and data collection.

Reference Information

Company Name: Mission Creek - Private Ranch
Location of Services: Livingston, MT
Contact Person: Larry Richardson
Telephone Number: 305-519-2744
E-mail Address: LRRareBooks@aol.com
Date(s) of Services: 2006 - Present
Key Personnel: Drake Burford
 Tom Coleman
 Mike Cox
 DeWitt Dominick



Mission Creek Planform Design

PMD Spring Creek and Yellowstone Cutthroat Spawning Habitat Restoration - Paradise Valley, Montana

The PMD Ranch LLC and the Nelson Ranch were interested in giving something back to the natural resources they enjoy so much. These ranchers decided to collaborate on a project to restore a small unnamed spring creek to provide optimum spawning habitat for Yellowstone cutthroat. The creek originates from three individual springs on the Nelson Ranch and runs through the PMD Ranch until it joins the Yellowstone River. The "creek" was functioning as a ditch and had been channelized long ago to drain a wet meadow. The entire area was marginal habitat for fish and wildlife and provided few grazing benefits.

Reference Information

Company Name: PMD Ranch
Location of Services: Livingston, MT
Contact Person: Andy Dana
Telephone Number: 406-586-0246
E-mail Address: danalaw@aspenprof.com
Date(s) of Services: 2005 - 2006
Key Personnel: Tom Coleman
Mike Cox
DeWitt Dominick

Funded through USDA's NRCS Wildlife Habitat Incentives Program, landowner cost-share and MT FWP's Future Fisheries Improvement Program, nearly 5,000 feet of a small spring tributary creek was restored and reconnected to the Yellowstone River.

The goals of the project included combining three different spring sources into one single thread channel to maximize flow rates and optimize cutthroat spawning habitat potential. The physical variability built into the new fluvial channel and wetland complex also offers trout rearing habitat and adult deepwater winter refuge.

Now that the habitat has been restored, FWP will "seed" the stream with fertilized Yellowstone cutthroat trout eggs during the spring spawning season to imprint the fish to the stream. These fish will return in subsequent years to spawn and provide the Yellowstone River with a flush of new fish. The project will yield significant numbers of Yellowstone cutthroat to the Yellowstone River system as well as providing high quality habitat for countless numbers of ducks, geese and deer.

Tom Coleman led design activities that included acquisition of funding, reference reach characterization, flood frequency analysis, sediment transport modeling, design of channel geometry, hydraulic analysis of the channel sections, bank design and floodplain grading. Mike Cox provided engineering review and DeWitt Dominick developed geomorphic design plans and led construction oversight efforts.



Pre-Construction



Construction



Post-Construction



One Year Later

Pool Creek Stream Restoration - Livingston, Montana

Development of design specifications and stream restoration plans and construction for a 2,500-foot reach of Pool Creek on a private ranch in Paradise Valley, Montana.

The land surrounding the creek was historically used as year round pasture for domestic bison and winter range for cattle. In an attempt to secure winter water for livestock, a previous landowner excavated the streambed below the water table. Spoils were disposed of adjacent to the channel in windrows. The lower end of the channel was dammed to provide water to summer livestock.

A new landowner initiated a reclamation project to restore and enhance fish habitat and to restore the creek as a spawning channel for Yellowstone cutthroat trout. Restoration planning included county, state and federal permitting including securing a 6.3 cfs water right from the Yellowstone River to supplement the inconsistent flows in the Pool Creek channel.

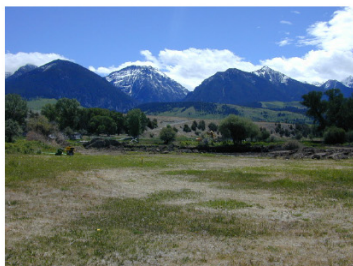
The project design included restoration of channel planform and profile, restoration of a riffle/pool sequence and design of in-channel habitat features. The lower 1,400 feet of new channel construction was designed to bypass an existing on-channel pond.

Additional benefits of the project included creation of over 10,000 ft² of wetlands surrounding the expanded pond; creation of a spawning resource for the Yellowstone River in an area where spawning streams are limited; an extensive riparian revegetation program over approximately 150+ acres of Yellowstone River bottom; and, enhanced habitat creation for migrating and indigenous waterfowl species.

Tom Coleman was responsible for design and construction oversight of this project which included the development of a restoration master plan and restoration design for the 2,500-foot reach of Pool Creek. Max Hjortsberg assisted in construction oversight and Russell Smith designed and implemented a revegetation scheme as well as provided construction coordination and supervision.

Reference Information

Company Name: Renaissance Ranch, LLC
Location of Services: South of Livingston, MT
Contact Person: Dan Todd
Telephone Number: 406-222-0398
E-mail Address: wbtodd@comcast.net
Date(s) of Services: 2001 - 2004
Key Personnel: Tom Coleman
Max Hjortsberg
Russell Smith



Pre-Construction



Post-Construction



One Year Later

Rocky Creek Streambank Stabilization - Bozeman, Montana

This streambank stabilization and floodplain renaturalization project included site evaluation, topographic survey, stream restoration design and regulatory permitting to stabilize and revegetate segments of Rocky Creek.

Five bank segments or zones of proposed bank stabilization and revegetation were identified, each site requiring a unique and innovative bank stabilization technique that incorporated locally salvaged native plants, wood and rock materials. Treatments proved effective after the first season of above average spring floods and new vegetation growth. Total biomass and recruitment density were rated 'excellent' after a six month monitoring period.

DeWitt Dominick served as project manager and conducted all site evaluations and surveys. He also designed the stream restoration plan and obtained all necessary permitting and supervised construction and revegetation activities. Tom Coleman assisted in developing and performed an engineering review on the stream restoration plan. Max Hjortsberg and Drake Burford provided project oversight and assisted with revegetation efforts. Meghan Fenoglio was in charge of plant production and revegetation efforts for this project.

Reference Information

Company Name: Rocky Creek Ranch
Location of Services: Bozeman, MT
Contact Person: Ron Lerner
Telephone Number: 406-582-8300
E-mail Address: ronlerner@aol.com
Date(s) of Services: 2005 - 2006
Key Personnel: Drake Burford
Tom Coleman
DeWitt Dominick
Meghan Fenoglio
Max Hjortsberg



Pre-Construction



Construction



Post-Construction

Trail Creek Restoration - Paradise Valley, Montana

This project includes design and construction of a 2,500-foot reach of Trail Creek through a failed reservoir basin and historic beaver meadow complex. A fourteen-acre earthen berm reservoir impounding Trail Creek was breached and failed in the record breaking 1996 spring floods, sending a torrent of water and debris downstream. As a result, a natural fish barrier that likely inhibits upstream fish movement was formed from channel scour in a bedrock canyon reach below the project site. The 2001 Fridley Fire five years later burned approximately 80% of the watershed upstream of the site and appears to have sterilized the upper drainage of a viable fish population.

The result of multiple impacts to the system is an unstable, deeply entrenched and straight channel configuration through the lake basin. This project will establish a newly restored channel at the historic floodplain elevation and re-introduce native Yellowstone cutthroat to the upper watershed. This sequence of natural catastrophic events provides a rare opportunity to restore a native trout population without direct competition from non-native fish.

Design activities have included identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor and floodplain grading. OASIS has secured MT Fish, Wildlife and Parks (MT FWP) Future Fisheries Improvement Program funding with matching funds from the landowners to begin construction of this project in the summer of 2007. MT FWP will implement a temporary fishing closure until the fishery establishes a healthy Yellowstone cutthroat trout population.

Tom Coleman directed all above-listed design activities and will oversee construction efforts that begin this summer. Mike Cox performed hydraulic review and assisted with design activities. DeWitt Dominick has and continues to provide project management and technical support for all design activities. He also helped secure MT FWP Future Fisheries Improvement Program funding with matching funds from landowners. Drake Burford conducted fisheries studies and inventories.

Reference Information

Company Name: Trail Creek Ranch
Location of Services: South of Livingston, MT
Contact Person: George Brokaw
Telephone Number: 212-632-6869
E-mail Address: gbrokaw@perrycap.com
Date(s) of Services: 2006 - Present
Key Personnel: Drake Burford
Tom Coleman
Mike Cox
DeWitt Dominick



Effects of reservoir collapse and subsequent 2001 Fridley Fire.

4.1.2 Resumes/Company Profile and Experience.

OASIS is an environmental consulting and engineering company incorporated in 1995. We have a staff of over 70 professionals located in several western United States offices, including offices in Montana (Livingston and Bigfork), Alaska, Washington, and Colorado. Corporation shareholders are comprised of principal-level staff; thereby, facilitating efficient decision making and responsive management of the company. Profits are shared with all staff annually. Our profit sharing philosophy and an industry-leading benefits package together cultivate an exceptionally motivated and committed work force.

OASIS is well known for providing high quality services in water resources, ecological sciences and environmental management. In April of 2006, OASIS acquired a water resource and environmental consulting firm, Aquatic Design and Construction (ADC Services), out of Livingston, MT. ADC Services incorporated in 1998 and built up a qualified staff of engineers and scientists with technical skills in stream channel design and restoration, wetland science, hydrogeology, hydraulic engineering, water quality, water rights, revegetation and construction oversight. An on-site native nursery facility is an integral part of the environmental services provided. Wetland and riparian plant material is grown and maintained in over 4,000 ft² of climate controlled greenhouse space and over ten acres of riparian shrub and tree production areas.

Our combined staff of natural resource scientists has worked with as well as established positive relationships with many private clients, local, state and federal governmental entities as well as regulatory agencies to solve complex problems using cost-effective and technically sound solutions.

OASIS specializes in stream channel design and restoration; fish habitat enhancement; fish passage assessment and design; wetlands restoration and mitigation; water quality monitoring and assessment; revegetation services; and native seed collection and plant propagation. Our approach to river restoration includes both the Rosgen Stream Classification and Design Methodology (Levels 1 – 4) and process based natural channel design methodologies.

OASIS employs registered professional engineers and scientists who are experienced in hydraulic engineering and river mechanics, fluvial geomorphology, fisheries biology, aquatic entomology, limnology, stream ecology, groundwater and surface water hydrology, bio-engineered streambank stabilization, soils, wetland science, plant identification and advanced statistical analysis. Our staff has a firm understanding of the most current bio-engineered streambank and shoreline restoration techniques. OASIS continues to lead the field in the development and implementation of innovative restoration treatments, utilizing native plant materials and the most effective erosion control products on the market.

Additionally, OASIS employs a professional engineer and fluvial geomorphologist who are certified as Technical Service Providers (TSP) for the USDA Natural Resource Conservation Service (NRCS). Through the TSP program, OASIS's staff are qualified with the NRCS to provide engineering services in the areas of channel and streambank stabilization; irrigation

water conveyance; non-irrigation water conveyance; soil stabilization for access; surface water detention / retention; water management (drainage); water well(s) configuration, installation and maintenance; wetlands engineering components; land treatment; and surface water management.

Our analytical and field-based knowledge provides the technical expertise to perform a variety of professional environmental services. These services include:

- ✓ Hydraulic Engineering and Analysis of Structures
- ✓ Stream Restoration and Channel Design
 - Topographic Survey and Mapping
 - Hydraulic and Groundwater Modeling
 - Geomorphology
 - Natural Channel Design
 - Construction Layout and Oversight
 - Permitting
 - Monitoring
- ✓ Wetland Delineation, Mitigation, Assessment, Restoration and Creation
- ✓ Baseline Biological and Fluvial Geomorphic Investigations
- ✓ Environmental Monitoring Studies
- ✓ Floodplain Studies
- ✓ Game Bird Habitat Restoration
- ✓ TMDL Support Services
- ✓ Greenhouse and Revegetation Services
- ✓ Freshwater Fisheries Studies
- ✓ Ichthyology
- ✓ Watershed and Water Quality Assessment, Analysis and Monitoring
- ✓ Bio-engineered Streambank Stabilization, Sediment Control and Revegetation Design and Implementation
- ✓ Permitting and Water Rights
- ✓ NEPA/MEPA Compliance
- ✓ Ecological Inventories and Risk Assessments
- ✓ Stakeholder Participation
- ✓ Data Management and Advanced Statistical Analysis
- ✓ Design and Construction Oversight

OASIS has completed a number of stream restoration projects in Montana. Table 1 lists relevant past and current stream restoration projects. Detailed project descriptions for each of these projects are provided in section 4.1.1 references.

A summary of OASIS staff education, professional experience and specialized skills is provided in Table 2. Resumes for key personnel, including pertinent work experience related to stream restoration projects, are included alphabetically in Appendix C.

(intentionally blank)

Table 1: OASIS stream restoration projects and associated services in Montana.

Project Name / Description	Date(s) of Service	Stream Restoration Services															Maintenance / Monitoring Activities
		Stream Profile & Cross-Section Topographic Survey	Geomorphic / Substrate Analysis	Functional Assessments	Fisheries Assessments	Plant Identification	Wildlife & Bird Observation & Documentation	Macroinvertebrate Sampling	Permitting	Reference Reach Characterization	Hydrology / Streamflow Analysis	Hydraulic Modeling & Analysis	Channel, Bank & Floodplain Design	Construction Activities	Revegetation	Project Reporting	
Applegate Ranch - Upland Bird and Stream & Wetland Enhancement	2007	X		X	X	X	X		X	X			X	X	X	X	X
Alderman River Ranch - Spring Creek Restoration	2007	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Cayuse Creek Stream Restoration	2007	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
DePuy Spring Creek Restoration	2007	X	X	X	X	X	X	X	X	X	X	X	X	X			
Lone Willow Creek - Stream Restoration	2007	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trail Creek Channel Relocation and Restoration	2006 to present	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mission Creek Channel Relocation	2006 to present	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PMD Ranch Spring Creek Restoration	2005 to 2006	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
Cinnabar Creek Culvert Crossing Restoration and Revegetation	2005	X	X	X	X				X	X	X	X	X	X		X	
Bear River - Bear River Ecological Monitoring	2005 to 2010			X	X	X		X	X							X	X
Rocky Creek - Streambank Stabilization	2005 to 2006	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Steve Coale - Fish and Wildlife Habitat Restoration	2005 to 2006					X	X		X					X	X		X
Caltron Creek Channel Relocation	2004	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
Eight Mile Ranch - Channel Restoration and Wetland Creation	2004 to present	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Woodson Creek - MDT Wetland Compensatory Wetland Mitigation & Stream Restoration	2004 to 2006	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Fleshman Creek - Stream Restoration & Revegetation	2004	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
Gallatin Valley Real Estate - Stream Relocation and Revegetation	2004 to present	X	X	X	X	X				X	X	X	X	X	X	X	X
Robert Tomasko - Habitat Enhancement	2003 to 2004	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Bitterroot River - Ravalli County, MT - MDT Mitigation Study	2002 to 2003	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Cloud Ranch - MDT Wetland Compensatory Wetland Mitigation & Stream Restoration	2002 to 2003	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jack Creek Ranch - MDT Wetland Compensatory Wetland Mitigation & Stream Restoration	2001 to 2004	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Renaissance Ranch - Channel/Lake Creation & Streambank Stabilization	2001 to 2004	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X

Table 2: OASIS stream restoration staff education, experience, and specialized training.

Name/Title	Degree(s)	Applicable Professional Registration(s) & Specialized Training	Professional Experience (years)
Matt Blank, EIT Civil Engineer	BS, Geological Engineering MS, Civil Engineering PhD, Candidate-Civil Engineering	CFX-5 Introductory Training Course Applied River Geomorphology short course (Rosgen, Level I) Designing and Implementing Habitat Modifications for Salmon and Trout short course (Univ. of Washington) Contractor Quality Control Training 40-Hr Hazardous Waste Operations and Emergency Response Training Instruction on Fish Population Data Collection Techniques (electrofishing, tagging, physical measurements and identification) by Dr. Tom McMahon at Montana State University.	13
Drake Burford Fisheries & Wildlife Biologist Hydrologist	BS, Geohydrology MS, Fish & Wildlife Management	The Waterloo Stream Course – Designing Stream Restoration Works; Riparian Area Management – Proper Functioning Condition Seminar; Riparian Zone Ecology, Restoration, and Management Workshop	10
Tom Coleman Water Resources Engineer Project Manager	BS, Civil Engineering MS, Environmental Engineering	Natural Stream Channel Design (Interfluvie, Inc.) Applied Fluvial Geomorphology (Rosgen, Level I) River Morphology and Application (Rosgen, Level II) River Assessment and Monitoring (Rosgen, Level III) Professional Engineer in Training	12
Mike Cox, PE Civil Engineer Hydraulic Engineer	BS, Geological Engineering Graduate Studies - Arctic Engineering	Montana Professional Engineer, CE 16910 Alaska Professional Engineer, CE 10574 NRCS Technical Service Provider, TSP-06-5507 1-Dimensional Surface Water Modeling using HEC-RAS 2-Dimensional Finite Element Surface Water Modeling using SMS 8-Hour Hazardous Waste Operations Supervisor Training CPN Radiation Safety and Use of Nuclear Gauges Construction Quality Management for Contractors, Corps of Engineers 40-Hr Hazardous Waste Operations and Emergency Response Training	11

Stream Restoration Services Term Contract Proposal

Name/Title	Degree(s)	Applicable Professional Registration(s) & Specialized Training	Professional Experience (years)
DeWitt Dominick Fluvial Geomorphologist	BA, Geography and Environmental Sciences MS, Watershed Science	Natural Stream Channel Design (Interfluve, Inc.) 40-Hr Hazardous Waste Operations and Emergency Response Training NRCS Technical Service Provider: Channel & Streambank Stabilization; Surface Water Management; Vegetation Land Stabilization; Wetland Creation, Enhancement & Restoration; Wildlife & Fisheries Development; Management & Restoration	10
Meghan Fenoglio Nursery Manager Plant Ecologist	BS, Horticulture	American Horticulture Society (AHS) Member Montana Native Plant Society (MNPS) Member Montana Nursery & Landscaping Association (MNLA) Member Wyoming Native Plant Society (WNPS) Member	8
Max Hjortsberg Riparian/Wetland Plant Specialist	BA, History Current Studies, GIS Certification	ArcGIS Auto-CAD Montana Water Right Investigations Nikon DTM-520 Total Station	6
Allison Lewy Land Rehabilitation Scientist	BS, Land Rehabilitation	Environmental Management Systems in Agriculture Nitrogen Management using NLEAP Computer Simulation Mode Global Positioning Systems Geographic Information Systems Soil and Water Conservation Society (SWCS) Member Montana Native Plant Society (MNPS) Member	4
Russell Smith Water Resource Specialist	BA, Environmental Conservation AA, Building Construction	Regulatory IV – Interagency Wetland Identification & Delineation (USCOE) Society of Wetland Scientists Member Montana Nurseryman Landscape Association Member Society for Ecological Restoration Member	13

Stream Restoration Services Term Contract Proposal

Name/Title	Degree(s)	Applicable Professional Registration(s) & Specialized Training	Professional Experience (years)
Jeannette Romig Wetland Scientist	BS, General Science MS, Earth Science	Wetland Delineation With Emphasis on Soils & Hydrology (Wetland Science Institute) 40-Hr Hazardous Waste Operations and Emergency Response Training Introduction To NRCS Introduction To Water Quality (NRCS) Conservation Planning, Part 1 (NRCS) Pest Management Track, Part 1 (NRCS) Nutrient Management Track, Part 1 (NRCS) Technical Service Provider: Wetland Creation, Enhancement & Restoration Wetland Scientist in Training, Society of Wetland Scientists	7
Kristen Wester Technical Editor Environmental Specialist	BS, Business Marketing & Accounting Current Studies, Ornithology	Ecosystem and Wildlife Courses - NWF Wildlife University Fundamentals of Technical Writing Nx Level Business Planning Managing Multiple Projects Advanced Level Training Montana Water Law - MT CLE General and Ethics Credits	10
John Gangemi River Ecologist	BS, Natural History MS, Environmental Studies	Aquatic Entomology EPA Rapid Bioassessment Protocols R1/R4 Fisheries Habitat Assessment ESRI ARCVIEW Training Mutual Gains Training Interest Based Negotiations	18
Nathan Sande Environmental Scientist	BS, Sociology/Natural Science MS, Environmental Science	ISO 14000 Lead Auditor Training 8-Hour HAZWOPER Refresher Course HAZWOPER Site Supervisor Training, HazCat® Chemical Identification/Categorization System (24-hour) McCoy's RCRA Training (40-hour) RCRA Land Disposal Restrictions Training (8-hour) Hazardous Materials Transportation Regulations Training (HM-181/126F) 40-Hr Hazardous Waste Operations and Emergency Response Training USACE Construction Quality Management (CQM) for Contractors	11

Stream Restoration Services Term Contract Proposal

Name/Title	Degree(s)	Applicable Professional Registration(s) & Specialized Training	Professional Experience (years)
Ken Miller, EIT Environmental Engineer	BS, Environmental Engineering	Hazardous Materials Level 1 Technician Emergency Medical Technician First Responder (EMT-FR) 40-Hr Hazardous Waste Operations and Emergency Response Training American Concrete Institute Technician 1 Troxler Nuclear Densometer Radiation Safety Training	9
Brian Anderson Hydrogeologist	BS, Earth Science/Hydrogeology	8-Hour HAZWOPER Refresher Course 40-Hr Hazardous Waste Operations and Emergency Response Training American Concrete Institute Technician 1 Troxler Nuclear Densometer Radiation Safety Training	4

OASIS implements a well-established definitive set of controls to ensure performance while maintaining a high standard of quality. These controls include our financial management system, our cost- and schedule- tracking systems and our ISO14001-certified Health, Safety and Environmental Management System (HSEMS). Our proven systems provide project managers and employees with the tools they need to effectively manage projects. These operational controls promote standardization for maximum efficiency.

OASIS also specializes in management systems and electronic tools to help manage work flow, compliance, monitoring and reporting. We are able to design and host databases and we understand the protocols associated with data management so that data is retrievable, useable and storable. Each OASIS office is equipped with the hardware and software necessary to access electronic bulletin boards and “ftp” sites. OASIS hosts Extranet services for its customers, which allows clients to upload and download documents and information, thus streamlining the report submittal and review process.

4.1.3 Ability to Meet Supply Specifications.

OASIS Environmental understands and will comply. Detailed supply specifications are submitted in the following sub-sections.

4.1.3.1 Experience.

Please refer to government and private landowner project summaries provided in section 4.1.1.

4.1.3.2 Subcontractor Experience.

Table 3 lists the subcontractors OASIS will utilize for projects awarded under this contract. The table includes subcontractor services, stream restoration background and experience as well as equipment and rates where available. OASIS employs a team of revegetation specialists and utilizes our on-site greenhouse facility to supply our projects with native plant materials; therefore, no revegetation subcontractors are listed in this list of qualifications.

Table 3: List of Subcontractors, experience and equipment.

Company Name and Contact Person / Address	Services Provided	Specialty Equipment & Rates	Professional Experience (years)
<p>Devers Excavation & Aquatics Contact: Justin Devers P.O. Box 1131 2000 North Lane Dillon, MT 59725 (406) 683-3560 devers_exc@bmt.net</p>	<p>Devers Excavation and Aquatics is an aquatics enhancement company specializing in the creation and restoration of river, stream, lake and pond ecosystems. They have completed numerous restoration and enhancement projects for fisheries and wildlife habitat throughout the state of Montana. These include construction and supervision of river stabilization, restoration and relocation, streambed manipulation, stabilization, restoration of in-stream habitat and spawning capabilities, lake and pond construction, reconstruction and the creation of shallow water wetlands for waterfowl habitat. Major project work has been performed in the last five years on several streams and rivers in Montana including: the Beaverhead River; the Big Hole River; the Boulder River; the Gallatin River; the Jefferson River; the Madison River; the Red Rock River; the Ruby River; the Shields River; the Yellowstone River; Stoddan Slough Creek; Big Sheep Creek; Sage Creek; Ruby Creek; East Rosebud Creek; Hyalite Creek; Cottonwood Creek; Big Bear Creek; Bull Run Creek; Baker Creek; Manhattan Creek; Warm Springs Creek; Danhoff Creek; Mill Creek; Jack Creek; and Horse Creek</p>	<ul style="list-style-type: none"> • Freightliner with Trailer - \$85/hr • Freightliner - \$75/hr • Kenworth Dump Truck - \$75/hr • Ford Dump Truck - \$75/hr • Water Truck - \$95/hr • 130 Excavator - \$115/hr • 280 Excavator - \$145/hr • 320 Excavator - \$125/hr • 950 Loader - \$85/hr • ATV with Attachments - \$65/hr • D4C Dozer - \$80/hr • D5M Dozer - \$90/hr • DEA4 Water Truck - \$65/hr • MTL Skid Steer - \$85/hr • Manual Compactor - \$55/hr • Miscellaneous Pumps - \$60 - \$350 per 12 – 24 hr period 	20
<p>Anthro Research Inc. Contact: Larry Lahren Box 1218 53 Mission Meadow Road Livingston, Montana 59047 (406) 222-3168 lahrenanthromt@mcn.net</p>	<p>Larry Lahren is the founder and director of Anthro Research Inc., Livingston, Montana. His is the first private, antiquity permitted cultural resource consulting firm in the northwestern Plains and northern Rocky Mountains. In addition to his research and consulting he also provides various public education activities including talks, workshops, publications, and field trips.</p>	Not applicable	41

TABLE 3: List of Subcontractors (cont.).

Company Name and Contact Person / Address	Services Provided	Specialty Equipment & Rates	Professional Experience (years)
<p>Elk River Earth Movers Contact: Sean Devine 4632 Old Yellowstone Trail N. Livingston, MT 59047 (406) 539-1516 seandevine@wispwest.net</p>	<p>Elk River Earth Movers has over 18 years of experience in trout habitat / aquatic resource enhancement, ranging from reclamation / revegetation, river and stream bank stabilization and in-stream habitat design and construction, to shallow freshwater wetland, pond and lake design and construction. In the last four years the focus of the business has shifted to heavy equipment construction.</p>	<ul style="list-style-type: none"> • Topcon H3A Laser Level • 25 Stadia Rod • Cat 325CL Excavator with Hydraulic Thumb - \$125/hr • Cat 962H Wheel Loader with Tool Carrier Attachment - \$145/hr • 4.25 cu. Yd. Bucket • 60" Pallet Forks • Cat D4 Bulldozer - \$100/hr • Cat 4WD Extenda-Hoe Backhoe Loader with 36" Bucket - \$75/hr • Semi Tractor with 80,000 lb. Rated Drop-Deck Lowboy Trailer - \$90/hr 	18
<p>Ogle Construction Contact: Mark Ogle 661 Highway 360 White Sulphur Springs, MT 59645 (406) 547-2141 snowbank@ttc-cmc.net</p>	<p>Ogle Construction has worked in wetland restoration and pond construction projects for close to ten years and most recently began work with stream restoration when they completed subcontractor work for OASIS Environmental on the Woodson Creek Wetland and Stream Mitigation project near Ringling, Montana.</p>	<ul style="list-style-type: none"> • John Deere 200CLC Excavator - \$120/hr • Hitachi ZX160 Excavator - \$120/hr • John Deere 310D Backhoe - \$75/hr • D5MXL Cat Bulldozer - \$100/hr • Mack Dump Truck - \$75/hr • International Dump Truck - \$75/hr • Western Star Dump Truck - \$75/hr • Freightliner Semi-Tractor - \$100/hr • Ranco Bellydump (2) - \$80/hr • John Deere 770B Grader - \$90/hr • Kamatsu WA250 Loader - \$90/hr • Ingersoll-Rand 66" Vibratory Roller - \$85/hr 	10

TABLE 3: List of Subcontractors (cont.).

Company Name and Contact Person / Address	Services Provided	Specialty Equipment & Rates	Professional Experience (years)
Polson Excavating, Inc. Contact: Marc Vert 41414 Homestead Lane Polson, MT 59860 (406) 883-2694 polsonexcavating@compuplus.net	<p>Polson Excavating, Inc. has been in business since 1978. A majority of their work in the last five years has been excavation work with lakefront sites on Flathead Lake.</p> <p>They presently have a work force of four people and have experience using various Tensar products (geo grid) and Gabion baskets.</p> <p>They have worked with Barry Hansen, the tribal biologist for Tribal Fisheries in the stream restoration area and also with Josh Smith of CMG Engineering.</p> <p>The owner has 25 years of river-running experience and has a keen understanding of hydrodynamics.</p>	<ul style="list-style-type: none"> 120 Hitachi Excavator - \$105/hr 161 Kubota (2) - \$80/hr T 300 Tracked Bobcat - \$80/hr 773 Wheeled Bobcat - \$65/hr G3R Gradall Excavator - \$80/hr 650 John Deere - \$100/hr Low Boy - \$85/hr End Dump - \$85/hr 666 Wabco Grader - \$75/hr 12 Yard Dump Truck (2) – \$75/hr 966 Cat Loader - \$110/hr 	29
TNT Excavating Contact: Ty or Alivia Smith P.O. Box 46 Ovando, MT 59854 (406) 793-2000 atsmith@blackfoot.net	<p>TNT Excavating has over twenty years of experience in stream restoration and design. The owner has completed and/or is scheduled to take several courses that complement his construction skills including: Applied Fluvial Geomorphology course by David L Rosgen – July 2001; Registered for Rosgen's River Morphology and Applications – July 2007; Registered for Rosgen's River Assessment and Monitoring – July 2007; Geomorphology and the role of the river; Extrapolation and prediction of hydrologic characteristics; Sedimentation; Stream Classification; Stream Restoration; Watershed management implications. He has worked on nearly forty small and large stream restoration projects in the past five years.</p>	<ul style="list-style-type: none"> 320BL Cat Excavator - \$140/hr CD110R-2 Komatsu 12yd Track Dump Truck - \$75/hr RC-100 Track Skidsteer - \$70/hr D5C Cat Dozer - \$90/hr Western Star 12 yd Dump Truck with Tiltbed Trailer - \$95/hr CD110R-2 Komatsu 10 yd. Tracked Truck - \$135/hr 	22

TABLE 3: List of Subcontractors (cont.).

Company Name and Contact Person / Address	Services Provided	Specialty Equipment & Rates	Professional Experience (years)
<p>Roe & Sons Excavation Contact: Melanie Roe PO Box 905 Big Timber, MT 59011 (406) 932-5171 mrroe@mtintouch.net</p>	<p>Roe & Sons has extensive experience in the wetland mitigation and pond and stream developments and restoration and has worked with several fish and wetlands biologists and consultants in southwest Montana.</p>	<ul style="list-style-type: none"> • Caterpillar D3 Dozer - \$75/hr • Caterpillar D4 Dozer - \$90/hr • Caterpillar D5 Dozer - \$105/hr • Caterpillar D7 Dozer - \$110/hr • Finish Shaper w/ Dozer - \$110/hr • Caterpillar 304CR Backhoe - \$85/hr • Caterpillar 436 Backhoe - \$75/hr • Caterpillar 225 Track - \$115/hr • Caterpillar 312 Track Hoe - \$115/hr • Caterpillar 320 Track Hoe - \$125/hr • Caterpillar 330 Track Hoe - \$130/hr • Reed Screen All with Loader - \$150/hr • Caterpillar 936 Loader - \$90/hr • Caterpillar 950 Loader (2) - \$90/hr • Vermeer Trencher - \$55/hr • Ditchwitch (2 Sizes) - \$65/hr • Sandpro 1 (2)- \$50/hr • Bobcat - \$50/hr • Caterpillar Drum Roller - \$85/hr • Caterpillar 140 Grader - \$95/hr • Caterpillar 12 Grader - \$85/hr • Dump Trucks - \$65/hr • Moxy Haul Trucks - \$135/hr • Water Truck - \$70/hr • Small Dump Trucks - \$60/hr • Dump Truck w/ Pup - \$75/hr • Tractor w/ Equip. Trailer - \$85/hr • Tractor w/ Flatbed - \$75/hr • John Deere 950 Tractor - \$75/hr • John Deere 970 Tractor - \$85/hr • John Deere 5530 - \$85/hr 	<p>24</p>

TABLE 3: List of Subcontractors (cont.).

Company Name and Contact Person / Address	Services Provided	Specialty Equipment & Rates	Professional Experience (years)
<p>Sandry Construction Contact: Mark Sandry 6025 Hwy. 35 Bigfork, MT 59911 Or: P.O. Box 9496 Kalispell, MT 59904 (406) 752-2419 sandry@centurytel.net</p>	<p>Sandry Construction has performed various projects for the Federal Highways Administration on the Going to the Sun Road in Glacier National Park with many of these projects involved with stream and watershed restoration. They have performed several projects including stream relocation projects and wetland mitigation projects over the last five years and have performed various projects for the city of Whitefish in and around the Whitefish River and for the City of Polson.</p>	<ul style="list-style-type: none"> • Caterpillar Motor Grader 140 G - \$98/hr • Backhoe - \$90/hr • D6R Caterpillar - \$115/hr • Seeding Equipment - \$30/hr • End Dump - \$75/hr • Caterpillar 303.5 Excavator - \$75/hr • Caterpillar 312 Excavator - \$97/hr • Caterpillar 315CL Excavator - \$107/hr • Caterpillar 318C Hydraulic Excavator - \$135/hr • Hitachi Excavator 135 with Thumb. Serial Number 111 - \$97/hr • Komatsu PC200 - \$138/hr • Komatsu PC300 Excavator - \$145/hr • Komatsu PC308 - \$145/hr • Komatsu PC400 - \$215/hr • 928 Caterpillar Wheel Loader - \$107/hr • Volvo L90E Loader - \$107/hr • 95 EMI Lowboy - \$95/hr • Cat 563 Roller - \$89/hr • Caterpillar 242 "Bobcat" Type - \$70/hr • Superintendent /Truck - \$65/hr • Foreman /Truck - \$48/hr • John Deere 5310 Tractor - \$76/hr • Belly Dump - \$80/hr • Hitachi TD1000 Track Truck - \$110/hr 	19

TABLE 3: List of Subcontractors (cont.).

Company Name and Contact Person / Address	Services Provided	Specialty Equipment & Rates	Professional Experience (years)
<p>Troy's Excavation Service Contact: Troy Hickman P.O. Box 4391 Bozeman, MT 59772 (406) 580-7969 troysexcavation@msn.com</p>	<p>Troy's Excavation Service is an excavation company specializing in stream reclamation and stabilization. Prior to starting his own business, Troy worked for Mike Adkins Construction based out of Livingston, Montana for eight years. Over the past ten years, Troy has assisted on eight major stream restoration projects for OASIS Environmental.</p>	<ul style="list-style-type: none"> • Large Excavator - \$120/hr • Mini Excavator - \$90/hr • Tracked Loader / Dozer - \$85/hr • Loader - \$100/hr • Dump Truck - \$85/hr • Semi-Tractor / Trailer - \$100/hr 	<p>11</p>

4.1.3.3 Staff Qualifications

As noted earlier the OASIS team includes a diverse and talented group of professionals bringing a multi-disciplinary approach to stream restoration projects. The qualifications of individual personnel involved with stream restoration projects are listed in Table 2 and further described below. Professional rates for each staff member are provided in Table 4 in Section 5. Resumes for each of these team members are included alphabetically in Appendix C.

Matt Blank – Civil Engineer

Mr. Blank is currently a doctoral candidate in the Civil Engineering Department at Montana State University specializing in river hydraulics, hydrology and fish passage. He has a Masters of Science in Civil Engineering from Montana State University and a Bachelors of Science in Geological Engineering from the University of Wisconsin -Madison.

Mr. Blank has a deep understanding of stream and river mechanics with extensive physical modeling and field measurement experience. He has created several 1-D and 3-D computational models of river and stream systems to establish water surface elevations for flood flows, to analyze dam breach scenarios, to recreate flood events using high water marks and step-backwater techniques and to assess the 3-D velocity diversity in hydraulic structures such as culverts. All projects Mr. Blank has worked on have combined field measurement with computational validations.

He has significant remediation experience as the field manager, project manager and project engineer for a number of projects involving ecological assessments, groundwater and surface water flow studies, waste inventories, characterization and removals, pipeline abandonment and assessment, above-ground storage tank (AST) and underground storage tank (UST) demolition, contamination assessments, intrinsic remediation studies of soil and groundwater, extensive groundwater monitoring studies, landfill evaluations, contaminated soils excavations and contaminated fate and transport modeling. He has prepared and implemented RA/RI workplans, field sampling plans, quality assurance project plans, contractor quality control plans, waste management plans, environmental protection plans and final reports.

Mr. Blank's areas of expertise include: Hydrology; river hydraulics; fish passage; fisheries biology; fluvial geomorphology; geology; Rosgen methods; contaminated site characterization and remediation (groundwater, surface water and sediments); 3-D and 1-D flow structure modeling; HEC-RAS, MathCAD, VBA and advanced statistical analysis; and multi-agency permitting.

D. Drake Burford – Fisheries Biologist & Hydrologist

Mr. Burford has ten years of experience working in both the private and public sectors of wildlife and fisheries consulting. His knowledge and skills in fisheries, wildlife and hydrology have

provided him the experience and leadership necessary to plan, organize, implement, monitor and evaluate successful water resource conservation and restoration programs.

Mr. Burford specializes in: Ichthyology; wildlife and fisheries biology and habitat management; development and implementation of stream restoration, bank stabilization and protection structures; installation of spawning channels, non-native fish barriers and fish passage structures; planning, coordinating and executing field inventories for aquatic TES species; stream and lake habitat assessments and fish population estimates at the watershed and sub-basin scales; oversight and implementation of revegetation plans; US Forest Service R1/R4, Hankin and Reeves basin wide inventory and Rosgen methods; planning and implementation of aquatic habitat and geomorphic monitoring programs; groundwater and surface water sampling; advanced statistical analysis; Section 303(d) and Section 404 permitting; and various technical document preparation.

Tom Coleman – Water Resources Engineer

Tom Coleman will be the project manager and contact person for this contract. Mr. Coleman has twelve years of experience working in the field of stream and wetland restoration. Tom has extensive field based experience with site evaluation and development of restoration strategies, channel relocation, geomorphic assessment, aquatic habitat assessment, floodplain re-establishment and revegetation, wetland hydrology assessment and design and wetland reclamation design. He also has specialized training in Rosgen Levels 1 - 3.

Tom's engineering background includes: Flood frequency analysis; scour analysis; bank stability and migration analysis; surface water modeling; sediment sampling; hydraulic design of structures; HEC-RAS modeling; aerial photo interpretation; permitting; and feasibility and alternatives analysis. Tom has also served as project manager and multi-agency liaison for multiple Montana Department of Transportation (MDT) compensatory wetland and stream mitigation projects.

Mike Cox, P.E. – Hydraulic Engineer

Mr. Cox has over eleven years of hydrology and hydraulic engineering related experience. His engineering background includes a variety of water resource projects including: Surface water modeling; hydraulic analysis; hydrologic assessments and engineering analysis; wetland mitigation design; bank stabilization and migration analysis; scour analysis; and water quality studies and monitoring. Mr. Cox has conducted numerous hydraulic engineering projects requiring the analysis of frazil ice, anchor ice and surface ice jams. He has worked with professional ice engineers and scientists from the United States Army Corps of Engineers Cold Regions Research Engineering Laboratory (CRREL) in compiling design approaches to minimize the potential of ice-induced flooding.

He has created several 1- and 2-dimensional surface water models of river and stream systems to establish flood flow elevations, velocity profiles and scour computations for a variety of hydraulic design projects. His experience also includes providing channel design, culvert

analysis and design, sediment sampling, implementation of fish habitat and passage designs, preparation of water quality plans and groundwater analysis.

Mr. Cox has also conducted over thirty geo-technical investigations involving soils investigation and characterization. He has served as project manager and field manager for numerous water resource and soil projects, successfully completing work for both public and private clients.

DeWitt Dominick – Fluvial Geomorphologist

Mr. Dominick has ten years of applied experience as a fluvial geomorphologist with an emphasis in river restoration and channel design, riverine sediment dynamics, riparian plant and stream ecology, fisheries habitat assessment, and management of regulated rivers. His background consists of project research and management, working on multiple spatial and temporal scales, from an entire watershed inventory and reach-based classification to at-a-station hydraulic and channel geometry assessment.

Mr. Dominick's areas of expertise include: geomorphic and ecologic assessment of fluvial process and form; landform and riverine survey mapping; hydrologic/hydraulic analyses; stream ecology; riparian wetland restoration; river bank stabilization and bio-engineering; regulatory permitting; concept development and alternatives analysis; historic aerial photo interpretation and analyses; and watershed scale inventory and assessment.

Meghan Fenoglio – Plant Ecologist

Mrs. Fenoglio has eight years of experience working in plant nurseries in southwestern Montana. Her responsibilities at OASIS include plant identification and community mapping for wetland delineations and stream restoration projects as well as coordinating field collections and identification for our revegetation projects.

She also organizes and supervises the production of large-scale native wetland and non-wetland plant orders for the OASIS Native Nursery. She oversees maintenance crews for all indoor and outdoor growing activities.

Additionally, Meghan has experience in woody plant propagation, plant physiology, horticultural science and technology, nutrient cycling and landscape management.

Specialized expertise includes: Identification of trees, shrubs, wildflowers and grasses; wetland delineation; coordination and oversight for large-scale native plant orders; extensive experience in plant propagation, field planting, and maintenance of revegetation; identification and control of plant pests; and, strategic management of greenhouse and outdoor growing areas.

John Gangemi – River Ecologist

Mr. Gangemi is a river ecologist specializing in holistic analyses of stream-river ecosystems with emphasis on the distribution and abundance of aquatic organisms; biological monitoring of water quality; consequences of land use practices on water quality; effects of lake and river regulation; effects of global climate change on stream ecosystems; factors effecting stream structure and function; aquatic conservation reserves; and natural resource regulation and policy.

In the field and laboratory, John has conducted rapid bio-assessments using benthic macroinvertebrates, periphyton sampling, stream habitat and wetland mapping, R1/R4 fisheries habitat inventories, data synthesis for regional scale sensitive species/aquatic habitat conservation mapping, deployment of automatic data recorders in remote locations, surface water discharge measurement and water quality sampling.

John also has expertise in recreational in-stream flow studies including survey design and implementation, recreation suitability and demand analysis, whitewater flow studies and whitewater park design. He has specific knowledge of and experience in regulatory procedures associated with the licensing of private hydropower dams regulated by the Federal Energy Regulatory Commission, National Environmental Policy Act, Clean Water Act 401 permitting, 310 permitting and 404 permitting.

Allison Levy – Land Rehabilitation Scientist

Allison has worked in the environmental consulting capacity for the past four years. Her specialized expertise includes: Identification and community mapping of noxious weeds, shrubs, perennials, annuals, grasses and hydrophytic vegetation communities; wetland delineation following the 1987 US Army Corps of Engineer guidelines; monitoring boundaries; soil classification and pedology; soil remediation and overburden science; soil and water chemistry; risk assessment; riparian ecology; nutrient cycling; rangeland resource measurements; Global Positioning Systems (GPS); and Geographic Information Systems (GIS).

Ken Miller – Environmental Engineer

Ken Miller is an environmental engineer with nine years of project experience. He is skilled in the areas of surface water and groundwater science, geotechnical investigation, storm-water design and construction, field program management soil and water sampling techniques and environmental remediation activities.

Mr. Miller has worked in private industry, non-governmental organizations, consulting, and operations management organizations.

Jeannette Romig – Wetland Scientist

Ms. Romig has worked as an environmental consultant for the past seven years. Her consulting career began in Alaska where she collected, field tested and analyzed contaminated soil, surface water and groundwater samples for large-scale remediation projects funded by federal agencies. After completing her graduate degree at Montana State University, her work focus has shifted to wetland restoration, creation, management and mitigation banking.

Ms. Romig's areas of expertise include all aspects of wetland resource management including: Wetland restoration feasibility studies; wetland mitigation banking plans; wetland construction plans; wetland monitoring plans; bank value assessments; Section 404 permitting; wetland delineations in Montana Regions 4 and 9 as well as Alaska; wetland planting schemes; weed management plans; hydrology assessment; wetland functional assessment; and water right investigation. Jeannette is also skilled in wildlife species inventories; NEPA documentation; construction logistics and site management; topographic survey of streams, ponds and wetlands; aerial photography interpretation; conservation planning; and advanced statistical analysis.

Russell Smith – Water Resource Specialist

Mr. Smith has thirteen years experience in the environmental consulting profession and has worked extensively on the reclamation of wetlands and waterways impacted by agricultural practices as well as the restoration of urban streams. He excels in revegetation design that maximizes ecological balance and long-term success.

Russell's areas of expertise include: Construction logistics, oversight, site management and review; revegetation and land reclamation planning design and supervision; topographic and biological survey of streams, rivers, ponds, lakes and wetlands; computer assisted drafting using longitudinal profiles, cross sections, site diagrams, renderings and map views; wetland habitat analysis; aerial photo interpretation; USGS topographic map interpretation; biological review, sampling, analysis, report preparation and presentation; fish management and macroinvertebrate inoculation; and permit preparation including investigation, requirements and agency communication. He has also presented at numerous professional conferences, community outreach seminars, municipal personnel training programs and stakeholder participation and watershed coordination groups.

Dave Trudgen – Regulatory Specialist & Biologist

Mr. Trudgen has thirty years of environmental experience. A wildlife biologist by training, he has extensive experience developing, managing and implementing environmental and biological programs. Dave's most recent long-term assignment has been with British Petroleum Exploration in Alaska where he has served as the team leader for the Biological Studies Program. Prior to that, Dave was the manager of Alyeska Pipeline Service Company's

environment department until joining OASIS Environmental in 1998. Dave also has extensive permitting and regulatory expertise and has specialized training in Rosgen Levels 1 -4.

4.1.3.4 Formal Training

OASIS employs registered professional engineers and scientists who are experienced in hydraulic engineering and river mechanics, fluvial geomorphology, fisheries biology, aquatic entomology, limnology, stream ecology, groundwater and surface water hydrology, bio-engineered streambank stabilization, soils, wetland science, plant identification and advanced statistical analysis. Our staff has a firm understanding of the most current bio-engineered streambank and shoreline restoration techniques. Tables 1 and 2 list our stream restoration service areas and staff expertise respectively.

OASIS specializes in stream channel design and restoration; fish habitat enhancement; fish passage assessment and design; wetlands restoration and mitigation; water quality monitoring and assessment; revegetation services; and native seed collection and plant propagation. Our approach to river restoration includes both the Rosgen Stream Classification and Design Methodology (Levels 1 – 4) and process based natural channel design methodologies. Tom Coleman and Dave Trudgen have completed Level III and Level IV Rosgen training, respectively.

4.1.3.5 Staffing

A summary of individual team member qualifications is described in detail in section 4.1.3.3 - Staff Qualifications. In addition, Table 2 lists team member education, professional experience, and specialized training. Furthermore, section 4.1.1 - References, explains the roles and responsibilities for team members in past and current stream restoration projects. Resumes are included in Appendix C.

4.1.3.6 Facilities

OASIS has two office locations positioned strategically in Bigfork and Livingston, Montana. These office locations allow OASIS to provide competitive rates within an effective radius of the respective offices. Tom Coleman, lead restoration design engineer based out of our Livingston office (which employs twelve full-time and two seasonal team members), will serve as project manager for projects awarded under this contract. Mr. Coleman, along with other senior members of the OASIS team, will coordinate project efforts with the appropriate regulatory agencies, remediation team, subcontractors, landowners, working groups and the public. This will include attending meetings, delivering presentations and providing written progress reports as well as making data readily available as required by the State of Montana. Senior OASIS team members have training and extensive experience working in collaborative proceedings. As such, these team members possess the collaborative skills to listen carefully and work effectively with all parties associated with any restoration and remediation efforts that could be awarded under this contract.

If awarded this contract, OASIS will provide regular updates to the State of Montana and other stakeholders throughout this process. Preliminary drafts and data needed for the restoration projects will be accessible in hardcopy and electronic format throughout the project. As previously noted in section 4.1.2, OASIS specializes in management systems and electronic tools to help manage work flow, compliance, monitoring and reporting. This functionality allows the stakeholders and the State of Montana project leads to upload/download documents and data, and retrieve key decision-making information in real-time, thereby streamlining review and analysis phases of projects. These information technology efficiencies have allowed OASIS to consistently meet project deadlines, while ensuring our clients reasonable time to review and provide input on key project outputs.

(intentionally blank)

SECTION 5: COST PROPOSAL

5.0 COST PROPOSAL

OASIS Environmental understands and will comply. Please refer to rate sheet in Table 4.

Table 4: OASIS Rate Sheet (for planning purposes only)

SPECIALTY	PERSONNEL NAMES	RATE (\$/HOUR)
Project Managers	Tom Coleman John Gangemi	\$90
Hydrology and Water Quality Specialist	Mike Cox, P.E. Ken Miller	\$90
Geohydrology Specialist	DeWitt Dominick	\$80
Vegetation Specialist	Meghan Fenoglio	\$45
Wetlands Specialist	Jeannette Romig	\$65
Fisheries and Aquatic Biology Specialist	John Gangemi Drake Burford	\$90 \$65
Terrestrial Ecologist	John Gangemi	\$90
Wildlife Biologist	Drake Burford	\$65
Geology and Soils Specialist	Allison Levy	\$45
Geochemistry Specialist	Matt Blank	\$90
Land Use Specialist	Bob Zimmer	\$75
Aesthetics (Visual Resources) Specialist		
Aesthetics (Noise) Specialist		
Socioeconomics Specialist		
Historic and Cultural Resources Specialist	Larry Lahren (Subcontract)	\$110
Transportation Specialist		
Communications Specialist -	Christopher Shock	\$45
Electromagnetic Fields (EMF) Specialist		
Economist - Need for transmission lines and pipelines		
Air Quality Specialist		
Drainage Design Specialist	Nathan Sande	\$90
Reclamation Cap Design Specialist		
Technical Editor	Kristen Wester Christopher Shock	\$45
Senior Clerical	Kristen Wester	\$45
Clerical	Kristen Wester	\$45
Mileage	All reimbursements will be based on state travel, lodging, and meal rates.	
Lodging		
Meals		
Other		

(intentionally blank)

SECTION 6: EVALUATION PROCESS

6.0 BASIS OF EVALUATION

OASIS Environmental understands and will comply.

6.1 EVALUATION CRITERIA

OASIS Environmental understands and will comply.

(intentionally blank)

APPENDIX A: STANDARD TERMS AND CONDITIONS

OASIS Environmental understands and will comply with the standard terms and conditions.

APPENDIX B: CONTRACT

OASIS Environmental understands and will comply with all terms and conditions in Appendix B.

APPENDIX C: OASIS STAFF RESUMES

Mr. Anderson is a junior hydrogeologist with four years of project experience. He is skilled in the areas of surface water and groundwater science, geotechnical investigation, stormwater design, environmental sampling techniques, environmental remediation activities and field team lead activities. Mr. Anderson is also a competent draftsman, with advanced skills using AutoCAD Civil 3D and Land Desktop.

EDUCATION

BA, Earth Science / Hydrology, Montana State University, 2002

SPECIALIZED TRAINING

AutoCAD Civil 3D Custom Overview, 2007

Hazardous Waste and Emergency Response, (HAZWOPER) General Site Worker 40 hr, 2005

Hazardous Waste and Emergency Response, (HAZWOPER) Refresher, 2007

BNSF Railroad Education Course - RWP On-Track Safety, 2006

BNSF Contractor Orientation Course – BNSF Safety, 2006

Troxler Nuclear Densometer Radiation Safety Training, 2002

BRIAN ANDERSON

Hydrogeologist

Selected Project Experience

WATER RESOURCE CONSULTING

- Utilization of AutoCAD Civil 3D for modeling, design, and construction of stormwater treatment systems, soil/groundwater sampling and tracking remediation activities.
- Conducted ground investigations and ground / surface water modeling for several 30+ acre residential developments using AutoCAD Civil 3D. Incorporated low impact development (LID) techniques into models and final stormwater design. Utilized LID techniques and design alternatives including bioswales, natural check dams, stormwater wetlands, bioretention ponds to route and attenuate flows while simultaneously treating stormwater runoff.
- Performed monitoring activities and reporting for the Bear River Black Canyon Monitoring Project, a study of a variable flow regime at the Grace Hydropower Facility/Black Canyon. Included investigation and reporting of macroinvertebrates, organic matter ash-free dry weight, periphyton, fisheries, filamentous algae, and channel Morphology.
- Conducted groundwater sampling and well repair for baseline study of proposed Diamond Chitna mine site, Alaska.

WASTE/REMEDATION EXPERIENCE

- Field Team lead for environmental remediation activities with the Solid Waste Management Unit, Prudhoe Bay, Alaska. Supervised and coordinated remediation activities at former exploration and production flare/reserve pits within oil exploration pads on the North Slope of Alaska. Responsibilities included heavy equipment management, site sampling and verification, completion of onsite GPS survey activities and base map creation, survey/environmental data management, and site closure reporting.
- Waste disposal coordination, oversight and sampling for 2006 GC2 flowline oil spill, Prudhoe Bay, Alaska. Worked with British Petroleum (BP) environmental advisors to establish waste stream tracking procedures and site sampling guidelines. Assisted BP with manifesting and soil sampling.

- Supported underground storage tank removals and sampling activities at a UST contaminated site in Libby, Montana. Completed field screening and post-excavation confirmation sampling and submitted samples using standard EPA/MDEQ protocols and chain-of-custody procedures.
- Completed subsurface investigations and materials testing at various road and airport development sites around Montana. Performed various investigative and onsite materials testing methods to determine compaction and complete soil classification.

Mr. Blank is currently a research associate with the Western Transportation Institute at Montana State University and a doctoral candidate in the Civil Engineering Department at Montana State University. He specializes in river hydraulics, hydrology and fish passage.

Mr. Blank has a solid understanding of stream and river mechanics with extensive physical modeling and field measurement experience. He has created several 1-D and 3-D computational models of river and stream systems to establish water surface elevations for flood flows, to analyze dam breach scenarios, to recreate flood events using high water marks and step-backwater techniques, and to assess the 3-D velocity diversity in hydraulic structures such as culverts. All projects combined field measurement with computational validations.

His areas of expertise include: Hydrology; river hydraulics; fish passage; fisheries biology; fluvial geomorphology; geology; Rosgen methods; contaminated site characterization and remediation (groundwater, surface water and sediments); 3-D and 1-D flow structure modeling; HEC-RAS, MathCAD, VBA, advanced statistical analysis and multi-agency permitting.

EDUCATION

BS, Geological Engineering, University of Wisconsin, 1994

MS, Civil Engineering, Montana State University, 2002

Ph.D. Candidate, Civil Engineering, Montana State University

SPECIALIZED TRAINING

CFX-5 Introductory Training Course

Applied River Geomorphology Short Course (Rosgen, Level 1)

Designing and Implementing Habitat Modifications for Salmon and Trout Short Course (Univ. of Washington)

Contractor Quality Control Training

40-Hr Hazardous Waste and Emergency Response (HAZWOPER) General Site Worker

MATT BLANK

Civil Engineer

Selected Project Experience

- **Chadbourne Diversion Barrier Assessment - Clyde Park, MT - 2006.** Mr. Blank performed a fish passage assessment of the diversion using a combination of hydraulic modeling under a range of flows combined with fish swimming and leaping abilities of Yellowstone cutthroat, rainbow, brown and brook trout to characterize its barrier status. The primary objective of this project was to assess whether trout may be able to pass from the Yellowstone River across the diversion dam into the Upper Shields River Basin and under what conditions might this passage occur. Three potential passage scenarios were analyzed: (1) the development of a side-channel that bypasses the diversion at high flows, (2) the potential for trout to leap over the structure, and (3) the potential for trout to pass through a keyhole or notch in the structure.
- **Denil Fishway Design for Flathead Creek Diversion -Flathead Creek, MT - 2005.** Mr. Blank designed a Denil fishway to allow passage of Yellowstone cutthroat through a diversion structure. The design included hydraulic and hydrologic analyses, detailed design drawings and cost estimates for construction. The project was approved and funded by the Future Fisheries Program.
- **Impacts of Barriers to Topeka Shiners - James River Basin, SD - 2006-Present.** Mr. Blank is the principal investigator for this project which is focused on quantifying physical conditions that allow, limit and prevent the movement of Topeka shiner, an endangered species living in several large watersheds in eastern South Dakota. The project will use a combination of in-field mark-recapture experiments, detailed hydrologic and hydraulic measurements and modeling and genetic testing to quantify barriers to this species. In addition, the project will provide design guidelines for new road crossings and for retro-fitting existing road crossings to allow movement of these fish.
- **Assessment of Barriers to Warm Water Fish Species - Various Streams in Eastern Montana - 2006.** Mr. Blank was part of a team of researchers who investigated the effect of culverts on the abundance, distribution and community structure of fish species in warm water streams in eastern Montana. The project characterized physical conditions (water depths, leap heights, water velocities, etc.) that prevented, limited and allowed the movement of different fish species.

- *High Water Fish Passage Assessment - Mulherin Creek, MT - 2006.* Mr. Blank was part of a team of researchers who investigated the movement of Yellowstone cutthroat trout and rainbow trout through a series of road crossings with a variety of fishway characteristics (baffles, sediment bottoms, smooth bottoms, etc). This project utilized a combination of passive integrated transponder (PIT) tagging of fish, gaging stations and detailed hydraulic measurements of flow depths and velocities with both 1-D meters and advanced 3-D velocimeters. The project was unique in that it provided a continuous record of movement over the entire ice-free period of the year.
- *Sediment Transport Modeling for Milltown Dam - Clark Fork and Blackfoot Rivers, MT - 2003.* Mr. Blank supported the development of a sediment transport model using HEC-6. The model was used to assess different dam breaching scenarios for Milltown Dam located near Missoula, Montana. Different breach scenarios were studied to estimate scour depths above the dam, total volume of sediment mobilized and downstream total suspended solids (TSS) concentrations. The model predicted TSS concentrations were compared to field water quality sample concentrations to generate regression relationships for metals and other contaminants in the sediments stored in the reservoir above Milltown Dam. These regression equations were used to estimate water quality at the downstream point of compliance for the breach scenarios.
- *Retrospective Analysis of Ecological Impacts of Dam Removal - Pattengail Creek and Bozeman Creek, MT - 2005.* Mr. Blank was part of a research project that investigated the ecological impacts from two different dam removals / breaches in Montana. The project took a retrospective approach to assess the level of impact to each stream ecosystem. Part of the project involved estimation of peak flood flows using high water marks and a step-backwater analysis. The dam on Pattengail Creek catastrophically failed in 1927 sending a torrent of water and debris down the channel. The dam at Mystic Lake, the beginning of Bozeman Creek at the time, was removed in a controlled fashion. The ecological effects were dramatic in Pattengail Creek compared with Bozeman Creek which experienced only minor ecological changes even though several large flow events have moved through the channel since dam removal.
- *Basin-Wide Fish Passage Culvert - Clearwater River Drainage, MT - 2004.* From 2001 through 2003, Mr. Blank was a research assistant for a Montana Department of Transportation (MDT) funded project that involved the assessment of how culverts may fragment fish distributions in the upper Clearwater drainage basin in Montana. This drainage was chosen in part because of resident populations of bull trout and westslope cutthroat trout; however, all species identified (including brook trout, brown trout, sculpin, and stickleback) were included in the analysis. The project included hydrologic, hydraulic, geomorphic, and biological data collection, statistical data analyses, management and report documentation. The biological data required estimating fish population characteristics through electrofishing depletion estimates. Survey techniques for the fish population, fish habitat and stream channel data collection followed USFS R1/R4 and Rosgen methodologies.
- *Geomorphic and Hydraulic Comparison between Mined and Pristine Reaches of Resurrection Creek - Alaska - 2002.* Mr. Blank developed a baseline monitoring program for assessment of mining impacts to Resurrection Creek, Alaska. The program involved a geomorphic trend analysis to evaluate mining impacts, both temporally and spatially, using historical aerial photograph sequences. Work tasks included establishment of and data collection at 48 permanent transects along seven miles of river. The initial data collected during the summer of 2001 was used to assess the mining impacts to the creek by comparison of hydraulic (both field and 1-D modeling data) and geomorphic parameters between a reference reach and two mined reaches. Hydraulic analyses were performed using HEC-RAS. Results from this monitoring and the mining impacts report were subsequently used by the USFS to develop a restoration plan for a one mile pilot restoration reach. The restoration project is in its second year of construction and should be completed by the end of 2007.

Mr. Burford has ten years of experience working in both the private and public sectors as a fisheries biologist and hydrologist. His knowledge and skills in both environmental areas have given him the experience and leadership necessary to plan, organize, implement, monitor and evaluate successful water resource conservation and restoration programs.

His expertise is in the design and construction of fisheries habitat restoration and enhancement projects. He also specializes in the assessment and design of fish passage structures. In addition, Drake integrates his background in hydrology to develop and implement stream channel restoration and bank stabilization projects.

EDUCATION

BA, Geohydrology, Montana State University, 1996

MS, Fish and Wildlife Management, Montana State University, 2005

SPECIALIZED TRAINING

R1/R4 Fish Habitat Assessment Methods

Montana FWP Electrofishing Safety Course

The Waterloo Stream Course – Designing Stream Restoration Works

Riparian Area Management – Proper Functioning Condition Seminar

Riparian Zone Ecology, Restoration and Management Workshop

First Aid / CPR Certification

DRAKE BURFORD

Fisheries Biologist

Selected Project Experience

FISHERIES AND HYDROLOGY

- Serves as the fisheries biologist on the research team for the Bear River Black Canyon Monitoring Study in southeast Idaho. The study was designed to examine the effect of the variable flow regime on the river channel shape, substrate and aquatic biota. The fisheries component of the project includes collection of specimens by electrofishing to determine and compare species composition, distribution, relative abundance and condition between reaches and through time. Responsibilities include coordinating, implementing and reporting the fisheries components of this study and assisting in all aspects of the field data collection process.
- Project manager for stream restoration project on Cayuse Creek in south-central Montana. Project involves the restoration of 11,600 feet of degraded stream channel. Restoration efforts include restoring appropriate channel cross-section, stabilizing banks, establishing riparian vegetation and fencing-off riparian areas. Responsible for site survey and assessment, substrate and streamflow analysis, assisting in channel design, acquiring necessary permits and supervising construction activities and revegetation efforts.
- Assisted in the stream channel design and coordinated and supervised the construction and re-vegetation efforts for a sixty acre riparian and emergent wetland restoration project near Ringling, MT. The project included the restoration of a 7,680-foot channelized reach of Woodson Creek. The restoration efforts included the reconstruction of the appropriate planform, profile and cross-section as well as the re-establishment of the historical floodplain and associated riparian vegetation.
- Responsible for acquiring the necessary 310 and Section 404 permits for a residential development project in Bozeman, MT. Assisted in the design of the two on-site wetland mitigation areas. Coordinated and supervised the construction efforts which created nearly two acres of wetlands by removing agricultural drain tiles and restoring the historical wetland hydrology and vegetation.

- Assisted in the stream channel design and coordinated and supervised the construction and revegetation efforts for a stream restoration project on West Catron Creek in Bozeman, MT. Historically, the highly sinuous creek was straightened and channelized to enhance agricultural production in the adjacent fields. The restoration project included the reconstruction of the appropriate planform, profile and cross-section as well as the re-establishment of the historical floodplain and associated riparian vegetation.
- Project manager for fish passage assessment of three road crossing culverts in northwestern Montana. Responsibilities included determining the high and low passage streamflows; setting up the model with appropriate functions and physical site characteristics; determining the proper analysis of fish species and life-stages; interpreting model output and results; and, completing a fish passage status report detailing and summarizing the findings.
- Masters thesis research involved the assessment of culverts as fish passage barriers using a multi-tiered approach throughout the Seeley River drainage in north-central Montana. Three distinct methods were used to assess the fish passage status of the study culverts including: 1) the FishXing software package; 2) comparison of upstream and downstream population characteristics; and, 3) direct passage assessment of marked fish. Data collection included hydrologic, hydraulic, geomorphologic and biological data. Statistical analysis was performed on the fish habitat and population data and the direct passage assessment data. The project was funded by the Montana Department of Transportation.
- Project manager for a fish habitat enhancement and stream restoration project involving Baker Creek and two tributaries near Belgrade, MT. Assisted in the design and coordinated and supervised the construction efforts for restoring and enhancing fish habitat in a 5,500-foot reach of Baker Creek. Project included the removal of fine sediments, restoration of pool / riffle morphology, installation of large woody debris elements, creation of rearing habitat and restoration of riparian vegetation. Work on tributaries included enhancement and creation of spawning habitat, reconstruction of appropriate width / depth ratio and sinuosity, removal of fine sediments, restoration of pool / riffle morphology, installation of large woody debris elements, creation of rearing habitat and restoration of riparian vegetation. Project also included the development of four groundwater ponds and the creation of a 300-foot spawning channel.

Mr. Coleman has twelve years of professional experience in stream, river and wetland restoration design and construction. His civil and environmental engineering background and knowledge of natural biological systems provides a balance of engineering fundamentals which are integrated into a natural systems design approach. Tom's broad based project experience includes site evaluation and development of restoration strategies, channel relocation, geomorphic and aquatic habitat assessment, floodplain re-establishment and revegetation, wetland hydrology and reclamation assessment and design. Tom's engineering background includes hydrologic and hydraulic modeling, bio-engineered bank stabilization, channel design and relocation, scour analysis, hydraulic design of structures and HEC-RAS modeling.

EDUCATION

BS, Civil Engineering, University of Tennessee, 1990

MS, Environmental Engineering, University of Tennessee, 1994

SPECIALIZED TRAINING

Natural Stream Channel Design (Interfluv, Inc.)

Applied Fluvial Geomorphology (Rosgen, Level I)

River Morphology & Application (Rosgen, Level II)

River Assessment & Monitoring (Rosgen, Level III)

American Society of Civil Engineers (ASCE) Member

Professional Engineer in Training (EIT)

First Aid / CPR Certification

TOM COLEMAN

Water Resources Engineer

Selected Project Experience

- *Mission Creek Channel Relocation - Livingston, MT - 2006.* This project includes relocation of a 2,500-foot reach of Mission Creek. The project will rectify agricultural related channelization activities that have significantly altered the channel function and aquatic habitat. Tom led design activities that included identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor, floodplain grading, wildlife species inventory and habitat assessment.
- *Trail Creek Restoration - Livingston, MT - 2006.* This project includes design and construction of a 2,300-foot reach of Trail Creek through a failed reservoir basin. A fourteen acre reservoir on Trail Creek collapsed in 1996 and approximately 80% of the watershed - upstream of the site - burned in 2001. The result of these multiple impacts to the system is a deeply entrenched straight channel through the lake basin. This project will establish a new channel at the historic floodplain elevation. Tom directed design activities that included acquisition of funding, identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor and floodplain grading.
- *PMD Spring Creek and Yellowstone Cutthroat Spawning Habitat Restoration - Paradise Valley, MT - 2005-2006.* Funded through USDA's NRCS Wildlife Habitat Incentives Program, landowner cost-share and MT FWP's Future Fisheries Improvement Program, nearly 5,000 feet of a small spring tributary creek was restored and reconnected to the Yellowstone River. The goals of the project included combining three different spring sources into one single thread channel to maximize flow rates and optimize cutthroat spawning habitat potential. The physical variability built into the new channel and wetland complex offers a variety of habitats including juvenile rearing, adult cover and spawning. Tom directed design activities that included acquisition of funding, reference reach characterization, flood frequency analysis, sediment transport modeling, design of channel geometry, hydraulic analysis of the channel sections, bank design and floodplain grading.

- *DePuy's Spring Creek Restoration - Paradise Valley, MT - 2006.* Tom developed restoration plans for a 1,500-foot over-widened reach of DePuy's Spring Creek. Excessive sedimentation of the project reach had reduced channel depth and velocities and, consequently, limited the existing fish habitat. Project design included removal of two to three feet of sediment along a sinuous course within the over-widened channel to establish a narrower, more efficient channel. Sediment removed was redistributed to better define the newly created channel.
- *Weber River Streambank Stabilization - Oakley, UT - 2006.* Tom led the design of this bank stabilization and habitat enhancement project, which included design and installation of a rock vane and grading of the opposite bank point bar. Work tasks included channel surveys, tractive force and flood frequency analysis, hydraulic analysis of a structure, materials specification, State of Utah Stream Alteration permit preparation and acquisition and project oversight.
- *Little Mission Creek Streambank Stabilization - Livingston, MT - 2006.* Tom managed the design of this bio-engineered bank stabilization project, which included design and installation of a sized native rock toe and bio-engineered the project's upper bank utilizing fabric encapsulated soil lifts and vegetative treatments. Work tasks included channel survey, tractive force and flood frequency analysis, hydraulic analysis of a structure, materials specification, 404, 310 and 318 permit preparation and acquisition and project oversight.
- *Woodson Creek Wetland Mitigation - Ringling, MT - 2006.* Tom led the design and construction of a sixty acre riparian and emergent wetland restoration and reconstruction of a 7,680-foot channelized reach of Woodson Creek. This site was converted to farmable land in the late 1960's by deepening and channelizing a high sinuosity reach of Woodson Creek and filling old channel meanders. The associated riparian area was cultivated and seeded to non-native cultivars. Restoration designs included developing appropriate planform, profile and cross-section for the creek and development of floodplain grading and revegetation plan. Project activities included developing floodplain and wetland grading plans, wetland water budgets, baseline and target functional assessments, wildlife species inventory (aquatic and upland), performance standards and revegetation strategies for the wetland and riparian components of the project. Streamwork tasks included geomorphic assessments and channel classification (Rosgen), reference reach characterization, design and construction specifications for natural channel re-establishment. All applicable federal, state and local permits were obtained by the design team.
- *Nelson Spring Creek Restoration - Paradise Valley, MT - 2006.* Tom developed restoration plans for a 900-foot over-widened reach of Nelson Spring Creek. Excessive sedimentation of the project reach had reduced channel depth and velocities and, consequently, limited existing fish habitat. Project design tasks included removal of three feet of sediment along a sinuous course within the over-widened channel to establish a narrower and more efficient channel. Sediment removed was redistributed to better define the newly created channel.
- *Jack Creek Ranch Stream and Wetland Mitigation - Ennis, MT - 2003.* Tom Coleman led the design and construction phases of an 80+ acre emergent wetland and 9,300 feet of a spring creek channel restoration on the Jack Creek Ranch near Ennis, Montana. The site had been progressively drained over the course of forty years through the development of an extensive ditch system. The land was regularly cultivated and farmed over the years of the drainage project. An associated spring creek on the southern boundary of the drained wetland was over-widened from years of agricultural use and fifteen on-channel ponds were excavated over a 3000+ foot reach of the creek. Project activities included developing grading plans, water budgets, baseline and target functional assessments, wildlife species inventory (aquatic and upland), performance standards and revegetation strategies for the wetland and riparian components of the project. Streamwork tasks included geomorphic assessments and channel classification (Rosgen), reference reach characterization, design and construction specifications to create a new channel within an over-widened reach of the creek with silt accumulations up to two feet and relocation plans to route a reach of channel around the series of excavated on-channel ponds. All applicable federal, state and local permits were obtained by the design team.

Mr. Cox has over eleven years of hydrology and hydraulic engineering related experience. His engineering background experience includes a variety of water resource projects: hydraulic analysis, surface water modeling, fish passage assessment, hydrologic assessments and engineering analysis, bank stabilization and migration, scour analysis, water quality studies and monitoring and ice jamming evaluation.

Additional water resource experience includes technical reporting, preparation of water quality plans, culvert analysis and design, sediment sampling, implementation of fish habitat and passage designs and groundwater analysis. Mr. Cox has served as project manager and field manager for numerous water resource projects, successfully completing work for both public and private clients.

Further civil engineering experience includes geotechnical investigations and foundation design recommendations, environmental engineering including remediation design, and permitting and general civil design.

EDUCATION

BS, Geological Engineering, University of Idaho, 1996

Graduate Studies, Arctic Engineering, University of Alaska Anchorage

SPECIALIZED TRAINING

NRCS Technical Service Provider, TSP-06-5507

Montana Professional Engineer, CE 16910

Alaska Professional Engineer, CE 10574

1-Dimensional Surface Water Modeling using HEC-RAS

2-Dimensional Finite Element Surface Water Modeling using SMS

Acoustic Doppler Current Profile Discharge Technology

Fluvial Geomorphic Processes in River Restoration, 2006. Missoula, Montana; Northwest Environmental Training Center

CPN Radiation Safety and Use of Nuclear Gauges

Construction Quality Management for Contractors, Corps of Engineers

MIKE COX, P.E.

Hydraulic Engineer

Selected Project Experience

- **Alderman River Ranch West Spring Creek Restoration - Belgrade, MT - 2007.** This project involved design of 4,500 feet of channel realignment. A prior reclamation project had failed to achieve restoration goals as a result of poor vegetation survival and related erosional channel widening. Freeze thaw processes also contributed to the observed erosion. The design process identified a stable channel dimension and construction methods that will provide bank stability during the vegetation establishment phase. Bank construction methods will include both sod and fabric encapsulated soil lift construction. Designs also defined a new plan form with appropriate sinuosity and bend curvature as well as establishment of an active flood plain width to eliminate channel flows adjacent to terrace slopes. Mike reviewed all design documents which included identification of restoration alternatives, flood frequency and channel hydraulic analysis, geomorphic design, and grading plans. Construction is scheduled for summer of 2007.
- **Chadbourne Fish Passage Assessment - Clyde Park, MT - 2006.** Conducted hydraulic analysis and fish passage assessment on a low head dam located in the Shields River. Fish passage assessment included analyzing the conditions and flow rates at which Yellowstone cutthroat, brown, brook and rainbow trout are able to pass from the Yellowstone River across the diversion dam into the Upper Shields River Basin. Tasks included surveying, hydrologic field assessment, flood frequency analysis, hydraulic modeling and compilation of fish passage assessment methods.
- **Mission Creek Channel Relocation - Livingston, MT - 2006.** This project includes relocation of a 2,500-foot reach of Mission Creek. The project will rectify agricultural related channelization activities that have significantly altered the channel function and aquatic habitat. Initial tasks included assisting with design activities that included identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor, floodplain grading, wildlife species inventory and habitat assessment.

- *Trail Creek Restoration - Livingston, MT - 2006.* This project includes design and construction of a 2,300-foot reach of Trail Creek through a failed reservoir basin. A fourteen acre reservoir on Trail Creek collapsed in 1996 and approximately 80% of the watershed - upstream of the site - burned in 2001. The result of these multiple impacts to the system is a deeply entrenched straight channel through the lake basin. This project will establish a new channel at the historic floodplain elevation. Mike performed hydraulic review and assisted with design activities. Work included identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor and floodplain grading.
- *Fisher River Floodplain Delineation - Flathead and Lincoln Counties, MT - 2006.* Performed a hydrologic assessment and hydraulic analysis along approximately three miles of the Fisher River at the Tom Rae property and Fisher Pines development. Analysis included performing 1-dimensional hydraulic modeling encompassing two bridges, multiple culverts and adjoining tributaries. Hydraulic modeling was conducted to delineate the limits of the 100-year floodplain. Additional tasks included completing the Letter of Map Revision (LOMR) process and flood frequency analysis.
- *Weber River - Oakley, UT - 2006.* Conducted stream restoration services for a private client to enhance bank stabilization measures and provide fish habitat in the Weber River near Oakley, Utah. Tasks included performing hydraulic analysis, submitting permits (USACE 404 and 10 Utah State Engineers), preparing design drawings and performing a flood frequency analysis using PeakFQ software.
- *Yukon River Backwater Analysis - Holy Cross, AK - 2006.* Conducted a backwater analysis using 1-Dimensional hydraulic modeling to establish the 100-year design water surface elevation of the Yukon River at Holy Cross. Additional tasks included performing the flood frequency analysis, bank migration and stabilization analysis, revetment design, ice impact and evaluation analysis, hydraulic structure (culvert) design and preparation of the Erosion and Sediment Control plan.
- *Middle Fork of the Koyukuk River Bank Stabilization - Coldfoot, AK - 2006.* Conducted a design study analysis evaluating bank stabilization options including riprap revetment and in-stream spur dikes. Tasks also included flood frequency analysis, establishment of the 100-year water surface elevation using 1-Dimensional hydraulic modeling and bank migration analysis.
- *Glennallen to Palmer Natural Gas Spur Line - South Central, AK - 2005.* Conducted field investigation and prepared technical report concerning the constructability of 21 proposed pipeline river crossings of anadromous fish rivers and streams. Other responsibilities included flying the remote pipeline route with state agencies to answer technical engineering questions concerning pipeline crossings at each water body.
- *1-Dimensional Modeling and Hydraulic Analysis at the Proposed Nigliq Channel Bridge - Alpine Oil Field, AK - 2005.* Conducted a hydraulic analysis by performing a backwater analysis and scour computations. Additional responsibilities included analyzing existing suspended sediment data and evaluating anticipated sediment transport loads prior to and after construction of the bridge.
- *Nigliq Bridge Bank Migration Analysis - Alpine Oil Field, AK - 2004.* Assisted with the analysis of bank migration along the Nigliq Channel at the proposed site of the Nigliq Bridge. Migration analysis was conducted by comparing aerial photography spanning 53 years and analyzing the impacts of permafrost along the banks.
- *1-Dimensional Modeling and Hydraulic Analysis at the Proposed Ublutuoch River Bridge - National Petroleum Reserve, AK - 2003 and 2004.* Conducted 1-Dimensional modeling of the National Petroleum Reserve at Alaska's Ublutuoch River using Hydrologic Engineering Center River Analysis System (HEC-RAS) software. Performed hydrologic assessment at two proposed bridge crossing locations and provided bridge hydraulic support using 1-dimensional surface water modeling.

Mr. Dominick has ten years of applied experience as a fluvial geomorphologist with an emphasis in river restoration and channel design, riverine sediment dynamics, riparian plant and stream ecology, fisheries habitat assessment and management of regulated rivers (1996 to present).

His background consists of project research and management, working on multiple spatial and temporal scales, from an entire watershed inventory and reach-based classification to at-a-station hydraulic and channel geometry assessment.

EDUCATION

BA, Geography and Environmental Sciences,
Middlebury College, VT, 1991

MS, Watershed Science, Utah State University,
1996

SPECIALIZED TRAINING

Fluvial Geomorphic Processes in River
Restoration, 2006. Missoula, Montana; Northwest
Environmental Training Center

Natural Stream Channel Design (Interfluvé, Inc.)

40-Hr HAZWOPER

NRCS Technical Service Provider: Channel &
Streambank Stabilization; Surface Water
Management; Vegetation Land Stabilization;
Wetland Creation, Enhancement & Restoration;
Wildlife & Fisheries Development, Management &
Restoration

First Aid / CPR Certification

Honorary Member of USDA-Cooperative State
Research, Education and Extension Service –
National Integrated Water Quality Program Panel
Review Board

International Association of Geomorphologists
(IAG) Member

American Water Resources Association (AWRA)
Member

DEWITT DOMINICK

Fluvial Geomorphologist

Selected Project Experience

- *PMD Spring Creek and Yellowstone Cutthroat Spawning Habitat Restoration - Paradise Valley, MT - 2005-2006.* Funded through USDA's NRCS Wildlife Habitat Incentives Program, landowner cost-share and MT FWP's Future Fisheries Improvement Program, nearly 5,000 feet of a small spring tributary creek was restored and reconnected to the Yellowstone River. The goals of the project included combining three different spring sources into one single thread channel to maximize flow rates and optimize cutthroat spawning habitat potential. The physical variability built into the new fluvial channel and wetland complex also offers trout rearing habitat and adult deepwater winter refuge. DeWitt was responsible for geomorphic and hydrologic analyses, final design plan specifications and project construction oversight.
- *Upper Trail Creek Channel and Floodplain Restoration - Park County, MT - 2006-Present.* This project includes design and construction of a 2,500-foot reach of Trail Creek through a failed reservoir basin and high mountain meadow. A fourteen-acre earthen berm reservoir collapsed during the record breaking 1996 spring floods, sending a torrent of water and debris downstream. As a result, a natural fish barrier that likely inhibits upstream fish movement was formed from channel scour in a bedrock canyon reach below the project site. Five years later, approximately 80% of the watershed, upstream of the site, burned in the 2001 Fridley Fire, which appears to have sterilized the upper drainage of a viable fish population. This rare sequence of catastrophic events formed an unstable, deeply entrenched and over-widened channel through the historic lake basin void of fish. This project will restore the degrading system to a more deep, narrow and sinuous channel geometry and reconnect the stream to its former floodplain elevation. An additional goal is to restore native Yellowstone cutthroat trout to the upper watershed. DeWitt has provided project management and technical support including identification of restoration alternatives, flood frequency and channel hydraulic analysis, characterization of a reference reach, design of bank stabilization treatments and bed armor and floodplain grading. DeWitt helped secure MT Fish, Wildlife and Parks Future Fisheries Improvement Program funding with matching funds from the landowners to complete construction of this project in the summer of 2007.

- *Yellowstone River, Levee Reconstruction and Pre-emptive Bank Stabilization - Paradise Valley, MT - 2005.* Unintended violation by a landowner of county, state and federal statutes protecting perennial rivers involved the breaching of a historic levee on the banks of the Yellowstone River. To avoid future 'emergency' flood action-reaction, a remediation plan for the levee and upstream bank segment included design of a buried 'fixed' rock groin structure, acquisition of all federal, state, and county permits and reclamation of the bank segments using woven-fiber encapsulated soil lifts and native seed mix.
- *Rocky Creek Bank Stabilization and Floodplain Renaturalization - Gallatin County, MT - 2005-2006.* Provided site evaluation, topographic survey, design and regulatory permitting to stabilize and revegetate segments of Rocky Creek. Five bank segments or zones of proposed bank stabilization and revegetation were identified, each site requiring a unique and innovative bank stabilization technique that incorporated locally salvaged native plants, wood and rock materials. Treatments proved effective after first season of above average spring floods and new vegetation growth. Total biomass and recruitment density rated 'excellent' after a six month monitoring period.
- *DH Ranch Wetland Mitigation - Edgar, MT - 2005-Present.* In collaboration with a private landowner, DeWitt presented this wetland mitigation project to the Montana Department of Transportation (MDT) to help offset future wetland impacts associated with highway improvements in Watershed #13, Upper Yellowstone River Basin, Carbon County, Montana. This project is under contract to create a minimum of seventeen acres of a wetland marsh complex that incorporates a variety of wetland habitats, including: open water, persistent emergent, scrub/shrub and wet meadow communities. As project manager, DeWitt was responsible for coordinating and completing data collection and analyses, design, permitting, contract negotiations and is currently overseeing all construction and revegetation phases which began in the spring of 2007 and will continue through the summer of 2007.
- *Mill Creek Bank Stabilization - Paradise Valley, MT - 2005.* The goal of this project was to stabilize approximately 530 feet of eroding bank on Mill Creek, tributary to the Yellowstone River near Pray, MT. Historic efforts by landowners to stabilize these bank margins included stacked vehicular tire riprap, and in more recent years, cabled cottonwood logs and boulder riprap, which exacerbated local erosion. DeWitt provided design support and construction oversight for the installation of several buried log-vane structures whose purpose is to control flood hydraulics, forcing flood flows back towards the center of the channel and reduce lateral bank erosion. Structures proved effective after the first season of above average spring floods. Lateral channel migration was negligible, and structures maintained deep pool habitat through scour and promoted woody debris recruitment on the outer bank margins.
- *Woodson Creek Wetland Mitigation - Ringling, MT - 2005-2006.* A stream and wetland restoration project that supplied over sixty acres of wetland mitigation credits to the Montana Department of Transportation (MDT) for road building activities in the Upper Missouri River Watershed. DeWitt directed the stream design phase of this project, which required extensive topographic surveying; reference reach identification and measurement; sediment sampling and incipient motion analysis; channel / floodplain design; aquatic species inventory; and, budget analysis.
- *Jocko River Bank Stabilization and Plant Salvage - Arlee, MT - 2004.* A Confederated Salish-Kootenai Tribe project concerning the large-scale restoration of the Jocko River. During the 2004 field season, DeWitt provided construction oversight for the implementation of bio-engineered stream bank stability structures including coir fabric soil lifts, root wads and logs jams. DeWitt also provided oversight for a major plant salvage operation that involved transplanting large native shrubs and trees (5 – 20 feet tall) from the new Jocko River channel to the historic floodplain.
- *Bitterroot River Assessment - Montana Dept. of Transportation (MDT) - Ravalli County, MT - 2002.* DeWitt provided project management, field mapping, GIS database development, and evaluation of the geomorphic character and condition of over sixty miles of the main stem of the Bitterroot River. Project objectives included a channel and bank stability inventory, cumulative effects analysis and historic evaluation of highway system impacts on channel and floodplain morphology. Six bridge structures were assessed to determine their relative effects on channel and floodplain function. Viable mitigation alternatives and strategies were developed to minimize and compensate for the transportation system impacts to the river system.

Mrs. Fenoglio has eight years of experience working in plant nurseries in southwestern Montana. Her responsibilities at OASIS include plant identification and community mapping for wetland delineations as well as coordinating field collections and identification for our revegetation projects.

She also organizes and supervises the production of large-scale native wetland and non-wetland plant orders for the OASIS Native Nursery. She oversees maintenance crews for all indoor and outdoor growing activities.

Additionally, Meghan has experience in woody plant propagation, plant physiology, horticultural science and technology, nutrient cycling and landscape management.

Specialized expertise includes: Identification of trees, shrubs, wildflowers and grasses; wetland delineation; coordination and oversight for large-scale native plant orders; extensive experience in plant propagation, field planting, and maintenance of revegetation; identification and control of plant pests; and, strategic management of the greenhouse and outdoor growing areas.

EDUCATION

BS, Horticulture, Montana State University, 2003

SPECIALIZED TRAINING

American Horticulture Society (AHS) Member

Montana Native Plant Society (MNPS) Member

Montana Nursery & Landscaping Association (MNLA) Member

Wyoming Native Plant Society (WNPS) Member

First Aid / CPR Certification

MEGHAN FENOGLIO

Plant Ecologist / Horticulturist

Selected Project Experience

- *Greenhouse Manager - OASIS Native Nursery - 2005-Present.* Meghan has managed the production of native wetland and non-wetland plant orders for large restoration projects throughout Montana for two years. She coordinates the propagation of many different species of native trees, shrubs, grasses and flowers in the climate controlled greenhouses at the OASIS Native Nursery. Prior to management, she assisted with intensive research regarding various native plant propagation methods and participated in organizing both indoor and outdoor growing activities.
- *DH Ranch Delineation - Edgar, MT - 2005-Present.* A wetland restoration project that will supply mitigation credits to the Montana Department of Transportation (MDT) for road building activities in Carbon County. A large-scale routine delineation following 1987 US Army Corps of Engineers guidelines and a functional assessment following MDT guidelines was conducted within the forty acre project area in order to accurately characterize and quantify the existing conditions of the site's wetlands before restoration work begins. Meghan was responsible for all of the vegetation aspects of the delineation. She also assisted in developing the revegetation plan tailored for alkaline soil conditions for the restoration efforts and oversaw the production of the wetland plants in OASIS's Native Nursery.
- *Selkirk Ranch Restoration - Two Dot, MT - 2005-Present.* A wetland restoration project that will supply mitigation credits to the Montana Department of Transportation. Meghan was responsible for plant identification, and wetland boundary delineation for the project. She was also responsible for overseeing the production of over 50,000 wetland plants that were used in the revegetation of this project.
- *Granger Ranch Wetland Delineation - Ennis, MT - 2006.* A Wetlands Legacy funded project requiring a large-scale wetland delineation and functional assessment necessary to document the site's wetland extent and condition prior to restoration activities on Upper O'Dell Creek. Meghan was responsible for plant identification, boundary delineation and report preparation for the 100+ acre project. Plant identification was difficult at times due to overgrazing impacts from cattle.

- *Woodson Creek Wetland Mitigation - Ringling, MT - 2006.* A wetland restoration project that supplied mitigation credits to the Montana Department of Transportation (MDT) for road building activities in the Upper Missouri River Watershed. A large-scale routine delineation following *1987 US Army Corps of Engineers* guidelines and a functional assessment following MDT guidelines was conducted within the 90 acre project area in order to accurately characterize and quantify the existing conditions of the site's wetlands before restoration work began on Woodson Creek. Meghan was responsible for all of the vegetation aspects of the delineation. She was also responsible for overseeing and coordinating the production of approximately 35,000 wetland plants for the successful revegetation of this project.
- *Meadow Creek Revegetation - Bozeman, MT - 2006.* Meghan was responsible for the production of approximately 24,000 wetland plants for the vegetation of a riparian meadow.
- *Permitting & Wetland Violations.* Meghan has performed a number of small-scale wetland delineations to fulfill Section 404 permit requirements and to assist clients cited with wetland violations. She also assists in developing mitigation plans associated with these projects.
- *Jack Creek Ranch - Ennis, MT - 2003.* Coordinated, organized and supervised the field collection and greenhouse production of approximately 50,000 native wetland plants for the revegetation efforts at Jack Creek Ranch. Over eighty acres of riparian and wet meadow wetlands were successfully revegetated.

JOHN T. GANGEMI

Senior Scientist, River Ecologist

John Gangemi has served as a river ecologist, director of conservation programs, recreational navigability expert, and regulatory expert for 18 years assisting private industry, non-governmental organizations, university research facilities and governmental agencies throughout the United States.

His expertise is in the development and execution of scientific studies particularly aquatic sciences focused on fisheries, aquatic entomology and periphyton. John also integrates his knowledge in the aquatic sciences with recreation instream flow studies and regulatory proceedings.

EDUCATION

BA, Natural History, Prescott College, 1984

MS, Environmental Studies, University of Montana, 1991

SPECIALIZED TRAINING

ISO 14001 Lead Auditor, AQS

OHSAS 18001 Lead Auditor, BSI

EPA Rapid Bioassessment Protocols

R1/R4 Fish Habitat Assessment Methods

Arcview Training

ACA Certified Kayak Instructor

Mountain Search and Rescue

Emergency Medical Technician

Selected Experience

BIOLOGICAL AND RECREATIONAL INVESTIGATIONS

- Program Director for national river conservation program. National expert in the FERC regulatory process for licensing hydropower dams. Directly involved in over one-hundred private hydropower dam relicensing proceedings including development of technical studies on water quality, fisheries, aquatic insects, geomorphology and recreation. Personally developed and implemented thirty-six recreation instream flow studies at FERC hydropower projects. Developed the framework and protocols for successful collaborative processes in hydropower license proceedings. Attended “mutual gains” training workshops and has extensive experience in interest-based negotiations for natural resource settlements and legal proceedings. Delivered numerous presentations to trade groups, agencies, NGOs and foundations on the requirements for establishing successful collaboratives in natural resource planning decisions. Served on the governing board of state, regional and national coalitions comprised of diverse interests in river conservation, river recreation and hydropower generation
- Project Manager for the Long-term Monitoring of Whitewater Flows on the Bear River. John Gangemi developed the Bear River Black Canyon Monitoring Study to examine the effect of the whitewater flow regime on the river channel shape, substrate and aquatic biota associated with PacifiCorp’s Bear River Hydroelectric Project (FERC No. 20) located in southeast Idaho. The new license, issued in 2003, requires PacifiCorp to implement periodic whitewater flows and study the biological effects associated with the variable flow regimes. The whitewater releases will occur at the Grace Hydropower Facility in the 6.2 mile reach known as the Black Canyon between Grace Dam and the Grace powerhouse. Specifically the Black Canyon Monitoring Plan includes investigation of: 1) Macroinvertebrates—population trends, diversity and community indices; 2) Organic Matter Ash-Free Dry Weight (AFDW); 3) Periphyton—chlorophyll concentration and biomass; 4) Fisheries—population trends, community composition, fish condition; 5) Filamentous Algae—density; and 6) Channel Morphology—shape and substrate composition.

- Project Manager for a research project investigating recolonization rates of benthic macroinvertebrates in the varial zone of the Kootenai River downstream of Libby Dam in Montana. In an effort to assess the affect of various Libby Dam operation strategies on lotic energy pathways, Marotz and Althen (2004) developed a benthic biomass model (RivBio) to estimate colonization and subsequent recovery periods of the benthic community (algae and macroinvertebrates) in the varial zone of the Kootenai River. The RivBio model currently assumes a 47-day sigmoidal curve for recolonization and recovery to pre-disturbance conditions based on estimates of recolonization rates obtained from the scientific literature. Montana Fish, Wildlife and Parks (MTFWP) contracted with OASIS to test the assumptions in the RivBio model with empirical data obtained on the Kootenai River. Time series sampling of the benthic macroinvertebrate in the varial zone throughout the summer season will quantify colonization rates. Benthic samples taken in the permanently wetted zone under base flow conditions serve as a reference. Varial zone benthic samples obtained over a sixty-day period in five-day increments will enable researchers to measure colonization rates. Comparisons include benthic abundance, species richness, similarity indices and other metrics
- Aquatic Ecologist for a NEPA process for the permitting of the Diamond Chuitna Coal Mine, Collection of extensive baseline data on the freshwater aquatic biology (fisheries, stream habitat, periphyton, benthos, lake habitat, and zooplankton) within and adjacent to the proposed mine project area. Data collected will be used by the U.S. EPA in an Environmental Impact Study to make a decision on permitting development of the mine. Methods include: Fish population estimates obtained through intensive minnow trapping throughout the basin from March through November 2006; adult population estimates obtained through aerial and ground surveys of spawning adults; periphyton and benthic macroinvertebrates sampled in March, June, July and September. Periphyton Ash-Free Dry Weight and Chlorophyll a analyzed to assess primary productivity. Benthos sampled using surber sampler. Benthic density, species richness, and numerous community indices analyzed to assess benthic community. Fourteen representative reaches of stream habitat surveyed with rod and level to map existing conditions for future reconstruction. Lake habitats sampled for resident fish species, zooplankton and macroinvertebrates.
- Project Manager responsible for development and teaching of two-day course for FERC staff in Washington, DC on the design, execution and evaluation of recreation instream flow studies. Recreation instream flow studies assess navigability, safety, and the quality and quantity of instream flows for recreation. In addition, recreation flow studies take into consideration ecological resource needs such as instream flows for fish, wildlife, channel maintenance and riparian environments. In addition, these studies balance competing consumptive water uses such as power, irrigation, or other uses. Recent Comprehensive Publication: Whittaker, D., B. Shelby and J.T. Gangemi. 2005. Flows and Recreation: A Guide to Studies for River Professionals. Hydropower Reform Coalition.
- Research Specialist responsible for ecological studies of river systems, river systems regulated by hydropower dams, influence of global climate change on distribution of aquatic biota and conservation biology of aquatic systems. Responsible for study design, grant writing, field sampling, database management, geographic information system development, and report writing. Specific skill sets included the following: benthic macroinvertebrate sampling and enumeration; periphyton sampling, enumeration, and laboratory procedures for chlorophyll a measurement; zooplankton sampling and enumeration; water quality sampling and laboratory analysis; surface water discharge measurement; limnological sampling; programming and deployment of automatic data recorders; database development and management.
- Principle investigator studying comparative analysis of the effects of wildfire and timber harvest on periphyton and zoobenthos in montane streams. Responsibilities included study design, field sampling, laboratory analysis and report writing. Specific skills included: benthic macroinvertebrate sampling and enumeration; periphyton sampling, enumeration, and laboratory procedures for chlorophyll a measurement; water quality sampling and laboratory analysis; surface water discharge measurement.
- Fisheries Technician conducting R1/R4 fish habitat inventories, develop and implement fisheries habitat improvement projects, fish population estimates, and map sensitive fish species distribution on forest. Responsibilities include supervising three person fisheries field crew, computer data entry and analysis, timber sale evaluation, BMP audits and report writing.
- Fisheries Technician responsible for designing and implementation of a creel survey. Responsibilities included aerial counts of anglers, interviews, computer data entry, and analysis as well as minor enforcement.

Mr. Hjortsberg has worked as a water resource specialist for the past six years and is responsible for aquatic enhancement and creation as well as field restoration design implementation. He is accountable for coordination and implementation of all aspects of wetland, stream and pond design and construction efforts including but not limited to: planning, design, topographic and as-built surveys, mapping, project management, project budgeting, site management, daily construction reporting, Montana state water rights investigations and applications, site reclamation, revegetation, supply and equipment acquisition and project maintenance.

EDUCATION

BA, History, Skidmore College, NY, 1996

Presently enrolled in Penn State's World Campus program for Post Baccalaureate Certificate in GIS

SPECIALIZED TRAINING

ArcGIS

Auto-CAD

First Aid / CPR Certification

Montana Water Right Investigations

Nikon DTM-520 Total Station

Trout Unlimited Board Member

MAX HJORTSBERG

Water Resource Specialist

Selected Project Experience

- *Applegate Ranch - Emigrant, MT - 2006-Present.* Max is project manager for this upland bird and aquatic habitat enhancement project. He developed a design plan to implement the necessary changes to establish the appropriate habitat that will sustain a healthy population of upland game birds, while still allowing for the historic agricultural operation of the ranch to continue. Construction was begun in the summer of 2007 to enhance two existing ponds on the property. In addition, a spawning stream will be built that utilizes the existing water supply previously diverted directly into the larger pond to provide excellent spawning and rearing habitat presently lacking for the trout population established in the pond.
- *Heritage on the Yellowstone - Livingston, MT - 2006.* Max designed, developed and provided all project oversight for a one and a half acre pond with a half acre adjoining wetland. Tasks included: design and layout, permitting, pond excavation and materials screening, liner installation, backfill and habitat structure placement, revegetation and landscape design and installation.
- *Private Residences - Livingston, MT- 2003 - Present.* Max is the lead project manager for many new pond, stream and water feature projects and improvements. Typical duties for these projects include: survey, design and layout, cost analysis and budgeting, design implementation and construction oversight, materials acquisition, revegetation and site reclamation and site monitoring and maintenance.
- *Jocko River Bank Stabilization and Plant Salvage - Arlee, MT - 2004.* A Confederated Salish-Kootenai Tribe project concerning the large-scale restoration of the Jocko River. During the 2004 field season, Max assisted in the implementation of bioengineered stream bank stability structures including coir fabric soil lifts, root wads and log jams. He also assisted in a major plant salvage operation that involved transplanting large native shrubs and trees (5 to 20 feet tall) from the new Jocko River channel to the historic floodplain.

- *Jack Creek Ranch - Ennis, MT - 2003.* Provided on-site construction management, surveying and revegetation design implementation for the restoration of 13,500 feet of channel for a spring creek on the Jack Creek Ranch near Ennis, Montana. Approximately eighty acres of wetlands were restored requiring the installation of over 50,000 wetland plants.
- *Eight Mile Creek - Paradise Valley, MT - 2002.* Provided on-site construction management, surveying and revegetation design implementation for the restoration of a 400-ft section of Eight Mile Creek. Max was also involved with a large-scale dredging operation to remove fine sediments from a five acre pond to reduce suspended solids in the downstream segments of Eight Mile Creek.
- *Big Timber Creek - Big Timber, MT - 2002.* Provided on-site construction management, surveying and revegetation design implementation for the restoration of a one mile section of Big Timber Creek. Max supervised installation of over 12,000 native plants within the project area.

Allison has worked in the environmental consulting capacity for the past four years. Her specialized expertise includes: Identification and community mapping of noxious weeds, shrubs, perennials, annuals, grasses and hydrophytic vegetation communities; wetland delineation following the 1987 US Army Corps of Engineers guidelines; monitoring boundaries; soil classification and pedology; soil remediation and overburden science; soil and water chemistry; risk assessment; riparian ecology; nutrient cycling; rangeland resource measurements; Global Positioning Systems (GPS); and Geographic Information Systems (GIS).

EDUCATION

BS, Land Rehabilitation, Montana State University

SPECIALIZED TRAINING

Environmental Management Systems in Agriculture

Nitrogen Management using NLEAP Computer Simulation Mode

Global Positioning Systems

Geographic Information Systems

First Aid / CPR Certification

Soil and Water Conservation Society (SWCS) Member

Montana Native Plant Society (MNPS) Member

ALLISON LEVY

Land Rehabilitation Scientist

Selected Project Experience

- *Banjo Mill - Denali National Park and Preserve, AK - 2007.* OASIS was contracted by the National Park Service (NPS) to review an existing site inspection and Engineering Evaluation/Cost Analysis (EE/CA) for the Banjo Mill and to identify data gaps necessary to revise the EE/CA. Allison was responsible for researching and documenting materials that were stored or disposed of on the site. Allison documented the physical and chemical attributes of each contaminant and was responsible for describing why the site is within a sensitive ecosystem by identifying species of concern and threatened species. She also identified indicator species on all trophic levels, the risk factors involved within the level of contaminants identified on-site as well as potential concern both biologically and for human exposure. A risk assessment was performed for all human levels of exposure.
- *Stampede Mine - Denali National Park and Preserve, AK - 2007.* OASIS was contracted by the National Park Service (NPS) to review an existing site inspection and Engineering Evaluation/Cost Analysis (EE/CA) for the Stampede Mine and to identify data gaps necessary to revise the EE/CA. Allison revised the existing EE/CA with text as well as tables by combining previous research and data that was collected in 2006. She also devised tables that displayed levels of contamination for surface waters, soil within the first forty inches, soil sediment, fine tailings and waste rock. The data used in the tables was collected in 1996 by the *United States Bureau of Mines* and in 2006 by the *National Park Service* biologist and an OASIS biologist.
- *Astrophysics Data Centers Executive Council (ADEC) - Itliktok, AK - 2007.* OASIS was contracted by the U.S. Air Force to evaluate a draft human health and ecological risk assessment work plan and conceptual site model for the North Slope in Alaska. Allison was responsible for performing a risk assessment by determining the chemical effects based upon the *United States Environmental Protection Agency Integrated Risk Information System* as well as standards that are specific to the North Slope in Alaska.
- *Granger Ranch - Ennis, MT - 2006.* A Wetlands Legacy funded project in which a wetland delineation and functional assessment were performed on the 200+ acre project area. Allison was responsible for plant identification, boundary delineation, surveying and report preparation for the project.

- *Sprague Property Development - Bozeman, MT - 2006.* OASIS was contracted by a private engineering firm to perform a wetland delineation for a potential development site. Allison was responsible for conducting a routine wetland delineation following the *1987 US Army Corps of Engineers* guidelines including: plant identification and indicator status, boundary delineation and writing and submittal of the final report document.
- *Alaska Frontier Constructors (AFC) - Anchorage, AK - 2006.* OASIS was contracted to address identified deficiencies between the requirements of ISO 14001:2004 and the existing Environmental Management System (EMS) documentation at AFC. Based upon the recommendations contained in the gap assessment, Allison wrote the following documentations: *Communications Procedure* - This procedure documented methods of communicating EMS and environmental performance information between relevant levels and functions within AFC, as well as communication with external interested parties regarding EMS; *Document Control Procedure* - This procedure was an outline of how AFC should control documents essential for effective environmental management and performance in the context of EMS; *Controlled Document Template* - This template was designed to provide a standard starting point from which to write additional EMS documentation or other environmental procedures.
- *Marina Cay - Flathead County, MT - 2006.* An Erosion Control Plan (ECP) was created to trap sediment for construction on the Marina Cay site. Allison was responsible for selecting plants to capture sediment from overland and flow. She developed a landscape design for two tracts within the project area. She provided a list of carefully selected plant species that are found within the region, have proven to be effective at capturing sediment and could be purchased from local nurseries found within the Flathead County region.
- *Low Impact Development - A template for OASIS HSEMS - 2007.* Allison developed a template with explicit information on various herbicides, pesticides and fertilizers that are 'environmentally friendly'. This template will be utilized in HSEMS documents for various projects.
- *Beaverhead County - Dillon, MT - 2006.* OASIS presented a proposal to assist Beaverhead County in designing and supervising construction of a project in compliance with all applicable requirements under the FEMA Pre-Disaster Mitigation Program. The Blacktail Deer Creek flows through the town of Dillon without a sufficient floodplain. Accumulation of ice along various sections of the river is creating flooding. Allison researched the formation of frazil ice and applied her findings to the creek system. She also provided various strategies in the proposal for solutions to prevent ice accumulation based upon flow data and research she performed.
- *Private Client - Whitefish, MT - 2006.* OASIS was contracted to perform an ecological inventory for a proposed residential development. During a field survey, Allison identified all species present, both flora and fauna, and indicated if species of concern were present. She also conducted a routine wetland delineation following the *1987 US Army Corps of Engineers* guidelines including: plant identification and indicator status and boundary delineations. For report preparation, Allison classified community types, identified 'sensitive areas' and prepared an ecological summary report about the project area.
- *USDA Wetland Determinations - Delta Junction, AK - 2006.* Wetland determinations were conducted on nine different parcels that totaled approximately 5000 acres. Wetland determinations were performed according to the *Alaska Wetland Mapping Conventions*. Procedures for wetland determination on agricultural lands were taken from the *National Food Security Act Manual (NFSAM)*. Procedures for non-agricultural lands were from the *1987 Corps of Engineers Wetland Delineation Manual (Corps Manual)* and the *Alaska Interim Regional Supplement to the 1987 Corps of Engineers Wetland Delineation Manual*. In addition, NRCS staff was consulted in cases where additional information or clarification was necessary regarding the use of NFSAM procedures. Allison was responsible for identification of vegetation; determining plant communities growing on-site by taxonomic identification of plant specimens within representative plots; and completion of data forms used in the final report.

KEN MILLER, EIT

Environmental Engineer

Ken Miller is an environmental engineer with nine years of project experience. He is skilled in the areas of surface water and groundwater science, geotechnical investigation, storm-water design and construction, field program management soil and water sampling techniques and environmental remediation activities.

Mr. Miller has worked in private industry, non-governmental organizations, consulting and operations management organizations. His engineering background includes: geotechnical design; flood frequency analysis; HEC-RAS modeling; storm water modeling; and permitting.

EDUCATION

BS, Environmental Engineering, Michigan Technological University, 1997

SPECIALIZED TRAINING

Hazardous Materials Level 1 Technician

Emergency Medical Technician First Responder (EMT-FR)

Hazardous Waste and Emergency Response, (HAZWOPER) General Site Worker 40 Hour

American Concrete Institute Technician 1

Troxler Nuclear Densometer Radiation Safety Training

Selected Experience

BIOLOGICAL AND ENGINEERING INVESTIGATIONS

- Investigator for ongoing water quality monitoring on the Swan River in northwest Montana. Collected summer peak temperature data with OnSet Optical thermographs and performed QA/QC against National Institute of Standards and Technology (NIST) registered digital thermometer. Data was assessed for compliance with State of Montana temperature criteria. Collected oxygen (DO) data using grab samples and tested with HACH Corporation DO test kit. DO was assessed for compliance with the Montana Department of Environmental Quality standards. Assisted in measuring instream flows using Sontek Flowtracker Acoustic Doppler Device and used data to create a rating curve for in situ staff gages.
- Project investigator for the Bigfork Hydroelectric Project's whitewater flow study. Analyzed information on operational considerations, economic feasibility, ramping rates, potential fish stranding and effects on water temperature during whitewater release flows.
- As fisheries analyst for this project, studied approach velocities and salmonid impingement on hydroelectric intake fish screen panels to assess effectiveness. Worked with design engineers to create an operationally feasible screen design that would prevent migration of adult and juvenile salmonoids. Due to the presence of aquatic Threatened or Endangered Species, specifically bull trout, this project was coordinated with the U.S. Fish and Wildlife Service.
- Inspector and geotechnical engineer on hundreds of small to large project sites. Completed subsurface investigations and materials testing at various highway, commercial and residential development sites along the front range of Colorado. Performed onsite materials testing using nuclear densometer to determine compaction and load bearing characteristics.

Ms. Romig has worked as an environmental consultant for the last seven years. Her consulting career began in Alaska where she collected, field tested and analyzed contaminated soil, surface water and groundwater samples for large-scale remediation projects funded by federal agencies. After completing her graduate degree, her focus shifted to wetland restoration, creation, management, mitigation banking and ecological site assessment.

Areas of expertise include all aspects of wetland resource management including: wetland restoration feasibility studies, wetland mitigation banking plans, wetland construction plans, wetland monitoring plans, bank value assessment, Section 404 permitting, wetland delineations, wetland planting schemes, weed management plans, ecological assessments, hydrology assessment and water right investigation. Jeannette is also experienced in: NEPA documentation, construction logistics and site management, topographic survey of streams, ponds and wetlands, aerial photography interpretation, conservation planning and advanced statistical analysis.

EDUCATION

BS, General Science, University of Oregon, 1997

MS, Earth Science, Montana State University, 2004

SPECIALIZED TRAINING

Wetlands for Water Quality (UNESCOE-IHE)

Wetland Delineation with Emphasis on Soils & Hydrology (Wetland Science Institute)

Introduction to NRCS

Introduction to Water Quality (NRCS)

Conservation Planning, Part 1 (NRCS)

Pest Management Track, Part 1 (NRCS)

Nutrient Management Track, Part 1 (NRCS)

First Aid / CPR Certification

40 Hour Hazardous Waste Operations and Emergency Response Training

Wetland Professional in Training, Society of Wetland Scientists

JEANNETTE ROMIG

Wetland Scientist

Selected Project Experience

- *Montana Department of Transportation (MDT) Wetland Mitigation Banking - 2004-Present.* Jeannette has been the lead wetland scientist for four large-scale MDT wetland mitigation banking projects: (1) Lazy E-L Ranch, Roscoe, MT., (2) Woodson Creek, Ringling, MT., (3) DH Ranch, Edgar, MT, and (4) Selkirk Ranch, Two Dot, MT. The purpose and primary objective of each project is to provide MDT with wetland credits that will offset wetland impacts associated with road improvement activities in Meagher, Carbon and Wheatland counties. Each project required an environmental wetland evaluation (includes wetland delineation, wetland functional assessment, and fish, wildlife and special resources investigation), geo-technical wetland evaluation (includes geologic, soils and groundwater hydrology evaluation), wetland water evaluation (includes a water right investigation and water budget analysis), wetland mitigation conceptual design development, wetland performance standard and credit ratio proposal development, as well as permitting, conservation easement and NEPA documentation. As part of each wetland mitigation design plan, Jeannette developed a detailed weed management plan, revegetation plan and long-term monitoring plan to ensure the restored and created wetlands remain a viable habitat for the future.
- *Montana State University Road Ecology (CE 586) Guest Lecture - 2007.* Prepared and presented a graduate level lecture on road impacts on wetland habitats. The lecture explained the types of impacts travel corridors place on wetlands, how wetlands respond physiologically to impacts, and best management practices to prevent, reduce and mitigate for those impacts. MDT protocols and wetland mitigation case studies were examined and discussed as a group.
- *O'Dell Creek - Ennis, MT - 2004 and 2006.* Lead field wetland scientist for the wetland delineation portion of the O'Dell Creek restoration project funded by the Montana Wetlands Legacy. A large-scale wetland delineation and functional assessment was performed on the 200+ acre project area. The purpose of the delineation was to identify and survey jurisdictional wetlands, as well as assess the extent of historic wetlands that would be restored once O'Dell Creek channel was reconnected to its floodplain.

- *USDA Wetland Determinations - Delta Junction, AK - 2006.* Wetland determinations for USDA/NRCS funding programs were conducted on nine different parcels that totaled approximately 5,000 acres. Procedures for determining wetland locations were based on the *1987 Corps of Engineers Wetland Delineation Manual* (Corps Manual), the *Alaska Interim Regional Supplement to the 1987 Corps of Engineers Wetland Delineation Manual* (Regional Supplement), the *Alaska Wetland Mapping Conventions*, as well as the procedures for wetland determination on agricultural lands from the *National Food Security Act Manual* (NFSAM). NRCS staff was consulted in situations where additional information or clarification was necessary regarding the use of NFSAM procedures. Jeannette was the team leader for these efforts and was responsible for soil and hydrology analysis, vegetation and wetland boundary determinations, photo documentation, aerial photo interpretation, GPS data collection, data synthesis and management as well as final report preparation.
- *93 LLC Ecological Inventory - Whitefish, MT - 2006.* Lead field scientist for an Ecological Inventory Analysis for the proposed 93 LLC Development in Whitefish, Montana. The inventory included an on-site and off-site investigation into the site's geology, hydrology, soils, floral communities, faunal communities, and identified conservation priorities for the development. Based on the results of the inventory, OASIS provided the developer with a list of recommendations to preserve and enhance sensitive habitats. Suggestions included road alignment and unit placement, storm water design and treatment options including vegetated swales and constructed wetland features, native vegetation plan, and erosion control best management practices.
- *Jocko River Bank Stabilization and Plant Salvage - Arlee, MT - 2004.* A Confederated Salish-Kootenai Tribe project concerning the large-scale restoration of the Jocko River. During the 2004 field season, Jeannette assisted in the implementation of bio-engineered stream bank stability structures including coir fabric soil lifts, root wads and logs jams. She also assisted in a major plant salvage operation that involved transplanting large native shrubs and trees (5 – 20 feet tall) from the new Jocko River channel to the historic floodplain.
- *Wetland Violation Mitigation - Southwest, Montana - 2003-Present.* Jeannette has performed a number of wetland mitigation investigations for private clients who have been cited with Section 404 violations by the US Army Corps of Engineers. Investigations typically involve a wetland delineation, Section 404 permit preparation, wetland mitigation plan and recommendations, as well as agency / client communications.
- *Private Client - Melville, MT - 2003-Present.* Evaluated impacts to wetlands resulting from an unpermitted irrigation project in Sweet Grass County, Montana. Approximately 320 acres were delineated based on 1987 US Army Corp of Engineers wetland delineation guidelines to verify historic wetland boundaries. Documenting historical wetlands allowed for a quantification of total wetland impacts. Jeannette organized and managed the delineation. She performed the soils and hydrology analysis in the field as well as the final field survey of the project area. She was responsible for the final wetland delineation report documents and assisted in developing compliance alternatives for the client. As part of the 'Order of Compliance' issued by the EPA, Jeannette developed and implemented a three year wetland monitoring program that will continue into 2008.
- *Jack Creek Ranch - Ennis, MT - 2003.* Provided on-site construction management and revegetation design implementation for the restoration of 9,300 feet of channel for a spring creek on the Jack Creek Ranch near Ennis, Montana. Approximately eighty acres of wetlands were restored requiring the installation of over 50,000 wetland plants.
- *Remedial Investigation / Feasibility Study at Soldotna River Terrace RV Park - State of Alaska Department of Environmental Conservation - 1998-2001.* Field technician responsible for soil and monitoring well sample collection to define a contaminated soil and groundwater boundary. Other responsibilities included analyzing and evaluating historical data to look for trends in groundwater contamination.
- *Annette Island - Alaska Remediation Services - United States Army Corps of Engineers - 2001.* A drum removal, site characterization and bulking project at a former military base on Annette Island, Alaska. Responsibilities included collecting field data (soils, surface water and groundwater) to direct the characterization, storage and removal of drums containing unknown waste.

Mr. Sande is an environmental scientist and project manager with eleven years of project experience in a wide range of consulting services ranging from environmental management system design and implementation to water resource engineering. He is highly proficient in data management, software application development, and advanced programming techniques. His understanding of a range of environmental issues coupled with his data management and technical computer skills allows him to provide efficient data support for a wide variety of projects.

EDUCATION

MS, Environmental Quality Science, University of Alaska, Anchorage, 2001

BS, Sociology / Natural Sciences, University of Alaska, 1995

SPECIALIZED TRAINING

ISO 14001 Lead Auditor

HAZWOPER Site Supervisor

McCoy's RCRA

RCRA Land Disposal Restrictions

USACE Construction Quality Management (CQM)

ASP.NET C# Application Development

NATHAN SANDE

Project Manager, Database Application Developer
Waste Management Specialist, Water Resource Scientist

Selected Project Experience

DATABASE APPLICATION DEVELOPMENT

- Designed and implemented waste management programs for several industry and government clients. Specific highlights have included the design and construction of a web-driven waste information database using ASP.NET technology (Waste Information System [WIS]) and a RCRA-compliant waste tracking application developed in Microsoft Access (Waste Tracker). Additionally designed and implemented user-friendly waste management manuals and development of waste management training modules for personnel.
- Application designer and compliance specialist during implementation of an ISO 14001 Environmental Management System for an offshore drilling company contracted to British Petroleum. Tasks included design and construction of a Microsoft Access location-driven Compliance Database for Gulf of Mexico (GoM) offshore drilling rigs, collecting and organizing environmental regulations applicable to various GoM lease/block locations and structuring these regulations into usable work instructions and operational controls for the drilling company's rig operators.
- Developed an electronic chain-of-custody (CoC) database application for British Petroleum (BP), streamlining field operations including sampler data entry, generation of CoCs and transmission of electronic CoC data to project laboratories and data validators. The application was developed using Microsoft Access and is currently used for all BP Alaska sampling/remediation projects. Managed project CoC databases and data validation processes for approximately 200 CoCs and 2000 individual samples.
- Designed and constructed an incident reporting and tracking application allowing efficient entry and output of Health, Safety, and Environmental performance data, and monitoring/tracking of corrective actions related to specific incidents. Application collected data within a Microsoft SQL Server database with an ASP.NET front-end web application written in C#.

- Developed a web-driven database application allowing Alaska Department of Environmental Conservation (ADEC) regulatory personnel to rank landfill sites according to existing and future hazards. A SQL Server database was designed and constructed against the ranking model used by ADEC, and provided ADEC personnel to test the model's output against various scenarios and modify the ranking model's algorithm. Application front-end was written in ASP.
- Developed a web-driven database application allowing Alaska Department of Environmental Conservation (ADEC) regulatory personnel to accurately identify and prioritize sites that have significant environmental threat issues to ensure that they are adequately managed by the contaminated sites program. The application allowed real-time prioritization of at-risk sites based upon the exposure risk, assisting in prioritization of personnel work loads and semi-quantitatively track contaminant exposure reduction at sites based upon the difference between current and initial site scoring. The application collected data within a Microsoft SQL Server database with an ASP.NET front-end web application written in C#.

WATER RESOURCE CONSULTING

- Stormwater design lead and project manager for several 30+-acre residential developments in Northwest Montana. Modeled site conditions and stormwater event scenarios using Stormwater Management Model (SWMM) 5.0 software, incorporating low impact development (LID) techniques into modeling scenarios and overall stormwater design. Utilized LID techniques and design alternatives included bioswales, natural check dams, forebays, stormwater wetlands, and bioretention ponds to route, attenuate flows, and simultaneously treat stormwater runoff. Initiated and completed permit writing process for Montana Natural Streambed and Land Preservation Act (Section 310) and Federal Clean Water Act (Section 404) for site work pertaining to this legislation.
- Project manager for environmental and water resource components of a 2000+ acre residential and golf course development. Activities performed included completion habitat balance plans, floodplain analysis, stormwater modeling and design, erosion/sediment control plans for construction and site revegetation design and implementation.
- Designed and constructed a Microsoft Access-based waterbody ranking database for the Alaska Department of Environmental Conservation (ADEC) to establish priority restoration and enhancement projects. The application allowed automated movement of a nominated, impaired waterbody through a complex decision process, utilizing inputs from various decision phases and providing an overall priority ranking for subsequent restoration actions. Compilation of specific water quality data and watershed conditions allowed a comprehensive look at the watershed's impaired status and regional ranking evaluation. The database was imported into ArcGIS 9.0 to present all watershed information using a web-based geographical map interface, facilitating holistic ranking and evaluation of the impaired waterbodies.

RUSSELL SMITH

Water Resource Specialist

With over thirteen years experience in the private sector, Mr. Smith has worked extensively on the reclamation of wetlands and waterways impacted by agricultural and industrial practices, as well as from the effects of urbanization. He excels in the process of multi-stakeholder facilitation as well as project implementation and communication.

His areas of expertise include: Procurement, project implementation and stakeholder mediation, initiation and logistics, site management and review; supervision; ecological survey of streams, rivers, ponds, lakes and other wetlands; site diagrams, renderings and map views; wetland habitat analysis; aerial photo and topographic map interpretation; biological review, sampling, analysis, report preparation and presentation; permit preparation and investigation; agency requirements and client liaison. Russell has also presented at numerous professional conferences, seminars, training programs, watershed groups and community outreach programs.

EDUCATION

BA, Environmental Conservation, Environmental Population and Organismic Biology (Minor), University of Colorado, 1993

AA, Building Construction, Dean College, 1988

SPECIALIZED TRAINING

Regulatory IV – Interagency Wetland Identification & Delineation (USCOE)

First Aid / CPR Certification

Society of Wetland Scientists Member

Montana Nurseryman Landscape Association Member

Society for Ecological Restoration Member

Selected Project Experience

- *Aquatic Design and Construction - Livingston, MT - 1998-2006.* Russell founded and successfully operated the Livingston environmental restoration business for ten years. In conjunction with client and project management, he has administered the company's native nursery growth and continues to pursue the expansion of water reclamation services and resource management for OASIS Environmental.
- *Selkirk Wetland Mitigation Site - Two Dot, MT - 2006-Present.* Facilitated and provided logistical support for the on-going creation of a fifty acre wetland mitigation site in Wheatland County, MT. Acreage composition includes emergent wetland, scrub/shrub and upland buffer and will offset highway updates and road building impacts for a large watershed in central Montana.
- *Meadow Creek Subdivision - Bozeman, MT - 2005-Present.* Facilitated a subdivision layout and land management strategy for a residential project that integrated wetland enhancement, wetland mitigation, best management practices and storm water management.
- *Gallatin Center - Bozeman, MT - 1998-2005.* Coordinated design, permitting and provided construction supervision and revegetation for wetland impacts as a result of commercial development. Continual activities include several phases of relocation and restoration of two straightened reaches of agriculturally impacted streams totaling over 4,500 feet of channel. Provided client with necessary wetland, stream and infrastructure technical support, permitting and appropriate agency communication.
- *Jack Creek Ranch - Ennis, MT - 2003.* Designed the stream corridor revegetation plan for the 9,300-foot reach of the restored McKee Spring Creek on the Jack Creek Ranch near Ennis, Montana. Russell also designed and supervised the implementation of the revegetation plan for eighty acres of restored wetlands. Both plans included contingencies for weed control, browse protection and irrigation. Extensive data collection, design and planning were required as the project provided compensatory credits as a wetland mitigation reserve to the Montana Department of Transportation (MDT) for road building activities in Madison County.

- *Renaissance Ranch - Paradise Valley, MT - 2001.* Designed and implemented a revegetation scheme and provided construction coordination and supervision for a 2,500-foot reach of Pool Creek and a six-acre off-channel lake. The land surrounding the creek and existing marginal on-stream impoundment was historically used as year-round pasture for domestic bison and winter range for a small herd of cattle. A new landowner initiated a restoration project to restore a spawning channel for Yellowstone cutthroat trout. Restoration planning included the involvement of county, state and federal permitting agencies and, in addition, secured a 6.3 cubic inch per second water right from the Yellowstone River. By supplementing the ephemeral stream flow, a more consistent planform and profile allowed for the restoration of a natural pool / riffle sequence and other habitat features. In addition, 1,400 feet of new spawning habitat was created by bypassing a marginal in-stream impoundment.
- *Mill Creek - Paradise Valley, MT - 2000.* Provided construction and plant salvage oversight for two projects on Mill Creek. Natural channel migration and spring flooding had severely eroded the Mill Creek streambank next to a residential structure and a subdivision road. Russell addressed the land owners' concerns about property damage by keying-in native rock toes into the streambed and installing coir fabric wrapped soil lifts that incorporated salvaged willow bundles.
- *Joseph Urbani and Associates, Inc - 1994-1997.* Designed, supervised, permitted and/or assisted over twenty lake and pond projects; eighteen stream and river enhancement projects that included both streambank stability treatment and revegetation design / implementation; and over twenty wetland revegetation projects.

DAVID TRUDGEN

Principal Scientist

Mr. Trudgen has 30 years of environmental experience, all in Alaska. A wildlife biologist by education, he has extensive experience managing interdisciplinary projects and designing and conducting field studies. He has broad experience with state and federal regulations including the National Environmental Policy Act (NEPA), Endangered Species Act, Marine Mammal Protection Act, Essential Fish Habitat evaluations, Migratory Bird Species Act, State of Alaska Fish and Game Regulations including Alaska Department of Natural Resources Title 41 permitting and State of Alaska Water Quality Regulations.

Mr. Trudgen has worked with diverse groups in the public and private sectors to help resolve environmental and biological study issues. He has participated in public meetings providing project specific expertise, reports and response to specific questions.

EDUCATION

BS, Wildlife Biology and Management, Michigan State University, East Lansing, Michigan, 1976

Secondary Education, University of Alaska Anchorage, 1983, 1984

PROFESSIONAL AFFILIATIONS

The Wildlife Society

The American Fisheries Society

Selected OASIS Project Experience

- Project manager and contributing author for the production of three independent Environment Unit Response Manuals for Alyeska Pipeline Service Co. (Alyeska), ConocoPhillips Alaska Inc., (CPAI) and British Petroleum Exploration, Alaska (BPXA) (in production). This is an electronic format manual (CD) that provides step by step instructions to aid members of the Environment Unit during the first several days of an oil spill response. The manual contains checklists, diagrams and reference materials that are all linked for easy access and retrieval. Example sampling plans (water, air, fish, wildlife, etc.), permit applications, instruction for mobilization of people and materials, wildlife care instructions and waste management plans are examples of the information contained on one CD. The manual originally designed for Alyeska was subsequently requested by CPAI and BPXA due to the amount of material presented and ease of use.
- Project manager for development of two best interest findings prepared for the State of Alaska, Division of Oil and Gas, for the Healy and Holitna basins. Best interest findings are similar to a NEPA Environmental Assessment in scope and content and are prepared for oil and gas areas leased by the state. Summary information was provided including petroleum potential and project property descriptions, current and project use of the project areas, descriptions of existing vegetation, wetlands, fish and wildlife and their habitats, potential effects of the project on water and air quality, fish and wildlife and their habitats, subsistence use and cultural and historic sites, mitigation measures to minimize potential impacts and discussion of geophysical and transportation hazards.
- Project manager and principle author for preparation of two Environmental Reports summarizing the potential effects of Strategic Reconfiguration of the Trans-Alaska Pipeline System (TAPS) and the Valdez Marine Terminal (VMT) for Alyeska. Alyeska is considering several changes along TAPS and at the VMT to increase operating efficiencies and reduce operating costs. The environmental reports were submitted to BLM to be used as the bases for project Environmental Assessments (EA). As such each report was developed, organized and written with all EA components.

- At the request of BPXA Mr. Trudgen served as their Biological Studies Team Leader. In this position he directed the development and implementation of biological studies for BPXA's exploration and operations on the Northslope of Alaska. More specifically, he recommended appropriate biological studies for proposed developments and monitoring programs for existing operations. Developed pertinent, scientifically credible biological projects that facilitated regulatory approvals for development projects. Planned, implemented, and evaluated short and long term projects associated with fish and wildlife resource protection in BPXA exploration leases and producing fields. Some specific studies included:
 - Hydrological study of North Slope lakes to determine water recharge rates;
 - Sediment transfer studies for trench debris from construction of the Northstar off-shore pipeline;
 - Bowhead whale migration route study;
 - Effects of emitted light attracting migratory birds to an offshore drilling and production island;
 - Waterfowl nesting surveys;
 - Aerial caribou enumeration, calving and distribution study; and
 - Polar bear denning surveys, etc.
- Negotiated and facilitated agreements with federal and state regulatory agencies and oversight organizations such as the AK Whaling Commission, BPXA Northslope asset managers, Native interests, North Slope Borough, and BP management.

Environment Department Manager, Alyeska Pipeline Service Co.

- Supervised a staff of 20 diverse professionals in fish and wildlife, air and water quality, hazardous waste, hazardous materials transportation, contaminated sites, oil spill reporting, and environmental permitting. Was responsible for staff professional development plans, performance reviews, staffing levels, and compensation levels. Provided advice on personnel issues.
- Produced, coordinated and revised several Alyeska programs and manuals: EN-43, Environmental Protection Manual; Alyeska's Environmental Excellence Program; EA-119, Environmental Atlas of the Trans-Alaska Pipeline System; Environmental Surveillance Program; the fish and wildlife section of Oil Spill Response Plans; and input and maintenance to the fish stream crossing database. The manuals provide guidance to Environment Department and other Alyeska technical and professional staff to help with unusual and every day environmental issues along the 800 mile pipeline route.
- Initiated Dave Rosgen style stream restoration along several streams crossed by the pipeline. TAPS crosses over 800 streams and rivers along the 800 mile route from Prudhoe Bay to Valdez. Maintenance of the water crossings to insure pipeline integrity is paramount to operating the pipeline safely and in an environmentally sound manor. Rosgen style techniques were employed at several river crossings to help reduce long term maintenance costs as well as (where practicable) improve fish habitats.
- Developed a field program to determine fish species present in rivers and streams crossed by TAPS. Determined field techniques and designed field forms to standardize all field investigations. Information was used to update the fish stream list initially developed for construction of TAPS.

Ms. Wester began her career with OASIS (formerly ADC Services) as office administrator and controller for the Livingston branch in 2001 and has over fifteen years of experience in professional office administration. Since 2006, she has assisted project managers in a variety of project activities including: Project research and management; contract cost estimate and budget analysis; project setup and filing procedures; project HSE plan preparation; document production; technical report and permit editing; draft bill reviews and project budget and deliverables tracking. She is also involved in general project field activities including purchase order requisition, supply and equipment acquisition and field data collection and analysis. She is a highly organized and detail-directed individual with excellent team skills.

Additional expertise includes grant research; grant application submittal and administration; technical editing; photo timeline sequencing; and financial report assessment and auditing.

EDUCATION

BA, Business Marketing & Accounting, Montana State University, 1992

Current Studies, Fisheries & Wildlife Biology, Oregon State University, 2007 and Bird Biology, Cornell Lab of Ornithology, 2007

SPECIALIZED TRAINING

Ecosystem and Wildlife Courses, NWF Wildlife University

Fundamentals of Technical Writing, MSU College of Technology

Nx Level Business Planning

Managing Multiple Projects Advanced Level Training

Montana Water Law - MT CLE General and Ethics Credits

First Aid / CPR Certification

KRISTEN WESTER

Environmental Specialist

Selected Professional Experience

- Project assistance in which OASIS will develop three trout pond fisheries and provide stream restoration services on a portion of Cayuse Creek in southwest Montana. Kristen will provide support for all phases of this project including groundwater well monitoring, site surveys, permit application preparation and submittal, plant, bird and wildlife identification, budget and cost estimate preparation and monitoring, site management and site revegetation.
- Development assistance of a design plan for an upland bird and aquatic habitat enhancement project near Emigrant, MT. The plan will implement the necessary changes to establish the appropriate habitat that will sustain a healthy population of upland game birds. Work will also be performed to enhance the existing ponds on the property. A spawning stream will be built that will utilize the existing water that is currently diverted directly into the larger pond and will provide excellent spawning and rearing habitat presently lacking for the trout population established in the pond. Construction plans are set to begin in the summer of 2007.
- Grant administrator for a MT Board of Research and Commercialization Technology grant project that began in 2005. The purpose of this project is to quantify and optimize the efficacy of proprietary floating islands for removal of phosphates and nitrates from streams. Kristen is responsible for administration of the current two-year grant contract which includes vendor and contractor term agreements; vendor and contractor payments; monthly, quarterly and annual report submittals to the State of Montana; budget and financial analysis of distributed grant funds; communication contact with project engineer, subcontractors and State of Montana grant coordinators; and grant application submittal for the new 2007 - 2009 term.
- OASIS led design and construction efforts on a sixty acre riparian and emergent wetland restoration and reconstruction of a 7,680-foot channelized reach of Woodson Creek near Ringling, MT. This site was converted to farmable land in the late 1960's by channelizing a high sinuosity reach of Woodson Creek and filling old channel meanders. The associated riparian area was cultivated and seeded to non-native cultivars. Kristen assisted with the identification and revegetation of native wetland plants, willows and seeding of both wetlands and uplands.

BOB ZIMMER

Conservation Planner

Selected Project Experience

Mr. Zimmer has over fifteen years of experience in resource evaluation and conservation. He has extensive expertise in land use planning including an emphasis on recreational uses, stakeholder facilitation and regulatory agency input along with a substantial background in project design and construction. Bob's skills allow him to provide effective planning, implementation and communication in concept design phases that can efficiently be transformed into final project designs.

Additional expertise includes working with water resource managers and developers to generate residential and commercial plans and regulatory permitting documents using Low Impact Development standards and techniques.

EDUCATION

BA, Geology & Computer Science, University of Colorado - Boulder, 1987

Geologic Engineering, Colorado Mines - Undergraduate Studies

SPECIALIZED TRAINING

First Aid / CPR Certification

- *Fernie Blackstone Resort - Fernie, British Columbia - 2007-Present.* OASIS has been contracted as the lead environmental engineering consultant for a 2,200 acre development in Fernie, B.C. The development is currently in its planning phase and will be one of the first cold climate developments to incorporate LID standards. OASIS is working with the developer to identify low-impact development goals and define development envelope and protected areas. The primary objective is to develop a complete LID stormwater site plan which will be integrated into the overall preliminary site plan. Bob will be responsible for identifying applicable zoning and land use subdivision regulations; identifying limits of clearing and grading within the development; identifying site fingerprints; evaluating total required impervious areas; and identifying those areas that can remain impervious. Bob will also perform an evaluation of the existing site drainage and hydrology including: watershed and micro-watershed delineation; design storm calculations; proper site model evaluation; compilation/development of model parameters for pre-development conditions; determination of post-development model parameters; a pre-and post-development hydrology comparison; identification of hydrologic control needs and LID BMP evaluation; and performing modeling iterations with various BMPs to determine which methods are optimal for the site.
- *Meadow Creek Subdivision Parks Master Plan - Gallatin County, MT - 2005-2006.* Bob was instrumental in the creation of a Master Plan for submittal to the City of Bozeman Parks and Recreation Board as a part of the Final Plat process for the 220 acre, 650+ unit Meadow Creek Subdivision in Bozeman, Montana. This document involved specific goals including: the preservation of existing aquatic features and the preservation of the agricultural heritage within the theme of the park planning. The developers set aside over twenty acres for active park areas and over forty acres of undisturbed native and interpretive areas.

- *Bigfork Marina Development - Bigfork, MT - 2007-Present.* Conducted a LID analysis and design for a small development on the shore of Flathead Lake. Primary concerns for the development were the prevention of stormwater pollution from entering Flathead Lake, an important water source from both a community values and ecological standpoint. OASIS developed a stormwater design which incorporated low impact vegetation infiltration basins, or swales, and permeable underground storage chambers to encourage exfiltration into groundwater.